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The Journal of Obstetrics and Gynæcology of the British Empire

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The Teaching of Midwifery based on The Lloyd Roberts Memorial Lecture*

By COMYNS BERKELEY, M.A., M. D., M.C. (Cantab.), F.R.C.P. (Lond.), F.R.C.S. (Eng.).

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THE General Medical Council, set up by the Medical Act of 1858, held its inaugural meeting on November 23rd, 1858, and in August 1859 the Council first directed its attention to Section 20 of the Act which deals with defects in the course of study or examination.

The Council thereupon appointed a committee to consider and report how far the course of study and examinations, required by each licensing body, were calculated to secure the possession, by persons obtaining their respective qualifications, of the requisite knowledge and skill for the efficient practice of their profession. Also to consider the most effective machinery for superintending the examinations, so as to secure that they should conform to a standard considered sufficient by the Council.

If people did not travel more quickly in those days than now, undoubtedly committees were not so dilatory, since this one presented its report in six days. A second committee was then set up to guide the Council in coming to a decision in conformity with Section 20 of the Act, representing the sufficiency or insufficiency of the course of study of general and professional education, and to report on the minimum number of subjects and examination.

In due course the Council passed the report of this committee, including as it did the subject of midwifery, but not diseases of women, and laid stress on the value of a practical examination.

In the Act of 1858 provision is made for the visiting of the examinations, by members of the Council, held by the various licensing bodies. As will be seen hereafter the reports of these Visitors were continually drawing attention to the position midwifery should hold in the teaching of medical students. The

*Delivered at Manchester, November 27th, 1929.

Council, after due consideration of the reports of its Visitors, forwarded its observations on these reports to the licensing bodies with a request for any comments they might choose to make.

In 1864 the University of Aberdeen recommended that its courses in materia medica and midwifery should be reduced from six to three months. It was in this year that a select committee of the Council was set up to deal with medical education and it reported in April 1865, "That it be recommended to the several licensing bodies that the courses of instruction required by them should be framed so as to secure a due share of attention to those branches more strictly connected with the practice of medicine and surgery and that it be suggested to these bodies that their regulations should be such as to prevent attendance upon lectures from interfering with hospital and clinical study." This resolution was passed by the Council and ordered to be circulated to the licensing bodies, and further some explanatory notes were added to the effect that medicine and surgery should include a knowledge of systematic and clinical medicine and surgery, and also of morbid anatomy. It is particularly to be noted that there is not a word concerning the teaching of midwifery in all this.

The first visitation took place in 1865. With respect to the observations submitted and the replies received there was but little to note in the majority of cases. The observations submitted were principally concerned with the suggestion that in certain instances licensing bodies might combine; the value of practical examinations in midwifery, with models and operations; the importance of oral examinations and of each candidate being examined by two examiners. The Apothecaries Society reported that it held a practical examination in every subject except midwifery and that it would obtain some midwifery models, a promise also made by The University of Aberdeen and the Royal College of Surgeons, Edinburgh, while London University carefully avoided any reference to the suggestion that two examiners should always be present at the oral examination of each candidate, and it was not until years later that, in this respect, London fell into line with all the other licensing bodies. There remained the suggestion that in framing the questions in an examination paper care should be taken that the candidates would be able to understand what the examiner intended to convey. The Council having especially commended the wording of the questions of the Professor of Materia Medica of the University of Edinburgh, advised all the other examiners to endeavour to reach his standard. Needless to say the authorities of this University were most pleased to learn that the questions set by one of their examiners had

received such special commendation. Not so, however, the authorities of the remaining licensing bodies, moreover those north of the Tweed appear to have taken this suggestion much more to heart than their confreres in the south. Thus the Royal College of Physicians of Edinburgh replied that it recognized the imimportance of questions being put in a precise way and had confidence that its examiners would draw them up in the best possible manner. In its opinion, however, the General Medical Council greatly erred in singling out the questions of any particular examiner, either for praise or censure and, that if it persisted in such a course, the confidence of the examining body in the wisdom and impartiality of the Visitors appointed by the Council would be shaken.

Glasgow agreed with the opinion expressed by the General Medical Council that the questions should be precise, but doubted if any single model, however appropriate to one examiner or to one locality, could with utility or propriety be recommended for all.

It was in 1863 that the subject of the value of lectures was first considered, the following resolution being passed by the Council, "That looking to the various curricula of professional education enforced by licensing bodies, the Council is of opinion that the number of courses of lectures may be reduced with advantage, so as to give the student more time for self-education. The overloading of curricula of education, whether as to the number of courses or of lectures, must be followed by results injurious to the student."

The Visitors in 1865 drew special attention to the training in midwifery required by many licensing bodies, stating that the period devoted to the teaching of midwifery might be extended with advantage, that as a fact the time devoted to this subject was too short, that greater attention should be paid to it and that the minimum attendance in labour should be 12 cases.

In 1867 a Committee of Education was appointed to consider and report on what were the subjects without a knowledge of which no candidate should be allowed to obtain a qualification to practise, and among these subjects midwifery was found to be specially noted, the Council stating that without a knowledge of midwifery no candidate should be entitled to obtain a qualification to practise, and that such knowledge should not only be theoretical but tested by a practical examination to include operative midwifery on models which was highly desirable, since in no other way could the examination be made completely satisfactory.

In 1868 a committee was appointed to consider and report how the various subjects which had been deemed requisite could be

taught with most advantage and in what order, and this committee reported, among other things, that two examiners should read each paper, that two examiners should be present at each oral examination and that practical examinations should be held in all subjects.

In 1869 Trinity College, Dublin recommended that each candidate should have studied for six months at a maternity hospital, and the Royal College of Surgeons, Ireland recommended the same with the addition that the candidate should have attended 40 cases of labour, and that the last summer session should be expressly allotted to the study of midwifery, "this being a subject which should be understood thoroughly by every general practitioner." In this year the Council appointed five of its members to consult with the various teachers of midwifery throughout the country, which led to the first important pronouncement by the Council, on the teaching of midwifery. The report pointed out that several of the leading teachers of midwifery thought that this subject should be studied in the third year. The Council, however, believed that it would be far better first to teach general medicine and surgery and, besides continuing the study of these, to let the last 12 months be occupied with midwifery, diseases of women and of children, and that it was "Decidedly of the opinion that the space allotted to midwifery was too short and that it should extend over one winter session and that the instruction in practical midwifery should be extended."

In 1871 the first real fight on the teaching of midwifery took place in the Council. The Education Committee having presented a report, which had been approved by all the teachers of this subject, a resolution was proposed that it was desirable that the course in midwifery should be extended, and that the student should be obliged to attend not less than 20 cases of labour, in addition to practical instruction in diseases of women, and that one entire winter session should be devoted to midwifery. This resolution met with a good deal of opposition and an amendment was proposed that the instruction should be extended beyond three months to include diseases of women, and that the student should attend not less than ten cases of labour. This amendment was succeeded by another which deleted the words "beyond three months." This second amendment was lost as also was the first amendment. The original motion was then put and lost so that the splendid efforts by a few far-sighted members of the Council to improve the teaching and training of midwifery failed.

A resolution however was passed that all other subjects should be studied practically, and that every student must fill the post of clerk to a physician and dresser to a surgeon prior to entering for

his final examination, but no regulation was made for the holding of similar posts in the maternity department. The Report of the Education Committee, thus shorn of all reference to midwifery, was then passed.

In 1872 the Royal Colleges of England set up a Committee of Reference "To arrange and superintend all matters relating to examinations in accordance with the regulations approved by the co-operating medical authorities," and it is not at all surprising to find that there was no teacher of midwifery on this Committee although this subject formed the third part of their final examinations.

In 1873 the Visitors again drew attention to the unsatisfactory state of the teaching and training of midwfery, one of them objecting to the fact that at the examinations of some of the licensing bodies the candidates were examined at the same table and at the same time in midwifery and anatomy. Another, that at one university in the examination for the degree in midwifery, all the candidates seemed to betray great ignorance of this subject, to have had very little practical experience and that "not a single candidate had applied the forceps with skill or even with intelligence."

Among such reports occur the following observations. That the authorities at Cambridge University, and elsewhere, were apprehensive that the practical examination of patients in midwifery and diseases of women would not be submitted to by such patients. The Visitors, however, premised that such apprehensions were without foundation as proved by the experience of certain other schools which was, that when such examinations were properly conducted, the "patients found nothing to offend them and were pleased to avail themselves of the care and attention bestowed upon them." That as regards the training at the University of Durham sufficient time was not given to the study of midwifery, that the clinical examination thereon was very little valued and very little sought after, and that owing to the low estimate put by the authorities on practical instruction in this very important branch of medicine, very few students availed themselves of the opportunities for experience at the Newcastle Maternity Hospital in which 500 women were confined every year, but were content with having attended ten women in labour. Moreover there was no special department for diseases of women although there was one for diseases of the skin.

The Visitor to the London University confessed that the feeling uppermost in his mind was one of regret at the waste of the valuable time of the examiners, since this University cared for nothing, with respect to midwifery, except that the candidates for its degree

had attended 20 cases of labour somehow or other. The Visitor to Edinburgh University points out that all candidates were liable to have a clinical examination and that this was the only body which had instituted such an examination. He goes on to say that it was unnecessary to comment on the importance of a clinical examination of a candidate applying for a license to practise midwifery and diseases of women, on the influence such an examination must exert on education and on the advantages which must flow from it in the future practice of the candidates. He pointed out that the study of practical midwifery at that present time was entirely inadequate, including as it did either three months attendance at a Maternity Hospital or the attendance on six cases of labour under the supervision of a registered general practitioner.

There was rather an amusing discussion between the Council and the authorities at Edinburgh concerning the use of the speculum. The Visitor had reported that a diagnosis of endometritis and endocervicitis had been accepted from a candidate who used a sound only and not the speculum to ascertain the condition, and that this student had passed the examination although it was evident that he must have known of the condition of the woman before he was asked to diagnose it. The Faculty replied that "Although the diagnosis could have been made more certainly by employing the speculum, yet the bimanual method, followed by the use of the sound, would give sufficient *data* to make the diagnosis, and that it was in accordance with the spirit of his education that the student, having made his diagnosis without the use of the speculum, abstained from its employment and so saved the patient the discomfort of what seemed to him a superfluous examination."

At these visitations it was generally Scotland that came in for the most criticism. For instance the Visitor remarked that although midwifery was an integral part of a qualifying examination, the teaching at Glasgow with no clinical examination, at Aberdeen with its three months at a Maternity Hospital, 100 lectures and six cases, and at Dublin University with no oral or practical examination, was entirely inadequate. The candidates for the degree of the University of St. Andrews were not required to produce particular evidence of having been engaged in the theoretical or clinical study of obstetrics and that in lieu of this they could present letters from men of note stating that they were respectable practitioners. At Aberdeen University to make up for the dearth of midwifery cases the students were granted free access to the museum and allowed "to practise on a special apparatus, which was very ingenious and completely calculated to give

those who had confined six women only, ideas which were incomplete, inadequate and erroneous." Moreover the students were not shown a single instrument at the examination. At another university although the students had to spend six months at a maternity hospital and be present at 40 cases of labour there was no oral or clinical examination. Another Visitor revealed that the Royal College of Surgeons, England, examined students in anatomy, physiology and surgery, and that the students then engaged in private practice.

In 1879 a memorial from the Obstetrical Society of London, dealing with the inadequate time allowed for midwifery training, was forwarded to the Council and by it referred to the licensing bodies.

In 1886 a new Medical Act was passed, and Section 3 states as follows:

"A qualifying examination in medicine, surgery and midwifery shall be an examination held for the purpose of granting a diploma or diplomas conferring the right of registration under the Medical Acts."

This is the first time that midwifery, as a necessary subject for qualification, is mentioned in the Medical Acts and there is no doubt that its insertion was due to the repeated efforts of the General Medical Council to insist on the various licensing bodies and teaching schools giving that attention to midwifery and diseases of women which these subjects demanded. Further, in an endeavour to ensure that there should be no doubt as to the meaning of Section 3, sub-section 2 goes on to state that "The standard of proficiency required from candidates at the said qualifying examination shall be such as sufficiently to guarantee the possession of knowledge and skill requisite for the efficient practise of . . . midwifery, and it shall be the duty of the General Medical Council to secure the maintenance of such a standard of proficiency as aforesaid and for that purpose such numbers of Inspectors as may be determined by the General Medical Council, shall be appointed by the General Medical Council, and shall attend as the General Medical Council may direct at all or any of the qualifying examinations held by the bodies aforesaid and these shall report as to the sufficiency or insufficiency of the examinations." Further Section 4 states "If at any time it appears to the General Medical Council that the standard required by licensing bodies in . . . midwifery is insufficient, it may report the fact to the Privy Council and that the Privy Council shall have the power of depriving such a licensing body of its right to grant a qualification."

The Inspectors differ from the Visitors in that they cannot be members of the Council or examiners, and their Reports, as to the sufficiency or insufficiency of an examination, after consideration by the Council, have to be sent to the Privy Council. If the report of an examination states that it is "insufficient," it is forwarded to the licensing body concerned which is given the chance of improving the examination and as a matter of experience this, in the end, is all that has been found necessary. The Reports of the Visitors differ in that they are confidential to the Council as remarks can be appended thereto which it may be injudicious to make public.

These and various other reports of its Visitors incited the General Medical Council in 1887 to set up a Practical Education Committee to consider "The best method of increasing the practical element in medical education and insistence on more clinical work" and it passed a resolution to the effect that the visitation of medical schools was a pressing question, more especially as regards the requirements and facilities of the practical teaching of midwifery, and a *questionnaire* was addressed to the various licensing and teaching bodies for information thereon. All replied, including Manchester, except St. Bartholomews Hospital which "respectfully declined to give any information." The replies revealed a remarkable divergence in the number of cases of labour the various licensing bodies required their candidates to attend.

For instance the Scotch Universities required six, Cambridge 10, London and the Royal Irish Universities 20 and Dublin 30. In addition the candidates for the London degree could attend their cases in private and, therefore, without efficient supervision or instruction. At the University of Durham the paper on midwifery was combined with that on pathology.

The report issued by the Education Committee was very exhaustive. With regard to the subject of midwifery it remarked that considering there was no efficient clinical and practical teaching except by actual attendance on cases of labour, such attendance on a sufficient minimum number of cases, under good supervision, should be required by rule, the locality of such attendances being a matter of secondary importance. The Committee was in favour of lectures maintaining that "An impressive description passes straight to the student and so is more striking. A diagram pointed to at a fitting moment and explained conveys a more definite impression." That there were in lectures abundant opportunities of illustration by objects and recent preparations, especially if the lecturer was enthusiastic in his subject. Lectures were too

often dull, wearisome and devoid of interest, resulting in listlessness of the student, who though present in body was absent in spirit.

In 1887 it was moved by Dr. Haughton "That the visitation of medical schools and hospitals is a pressing question, more especially as regards the requirements and facilities for the practical teaching of midwifery."

In 1888 the first inspection in midwifery, under the new Act took place and the Inspector was at some pains to point out that in the Act the examination is defined as one in midwifery as well as in medicine and surgery, and for the purpose of qualifying these three subjects must be regarded as indivisable. That as the examination has to guarantee the possession of a knowledge and skill requisite for the efficient practise of midwifery, the system of compensation was entirely wrong, the licence guaranteeing an adequate skill for practising midwifery. Nevertheless in some examining bodies there was a tendency to regard midwifery as of secondary importance, the examiner in midwifery having to examine in other subjects at the same examination. That this system of compensation was especially marked at the examination of the Apothecaries Society which allowed a candidate to pass if he had done very badly in midwifery as long as he had done well in surgery and at the University of Cambridge candidates who had gained 40 per cent only in the oral in midwifery were granted their degree if they did well in other parts of the examination, and that it was a moot question whether, in any circumstances, a candidate who had gained such marks only, should be considered to have the necessary skill to practise midwifery. The Inspector further drew attention to the fact that the Conjoint Board of England was the only body which stipulated that there should be a separate oral examination in midwifery and diseases of women. That at the University of London's examination in midwifery the candidates were imperfectly isolated, and as the examiner asked the same question over and over again the candidates very soon got to know what questions they would be expected to answer when their turn came, the proof of this being reflected in the marks awarded to each candidate. That as regards the teaching in Edinburgh the gynæcological wards of the hospital in that town afforded abundant evidence as to how seriously the clinical training in midwifery had been neglected. That as regards the examination of the Conjoint Board in Ireland not a single instrument was shown to any candidate, which the Inspector apparently regarded as comparable to the play of Hamlet without the Prince of Denmark.

As a result of all these and like remarks the Council passed a

resolution in 1888 that every student should attend for three months the indoor practice of a lying-in hospital or be present at not less than 12 cases of labour, three of which should be personally conducted under the personal supervision of a registered medical practitioner, an amendment that the number should be 20 being lost.

In 1890 a petition was forwarded to the Council by Dr. Rentoul, on behalf of 337 general practitioners, including one from Moseley It stated that the petitioners were desirous of improving the very inadequate teaching in midwifery and the bad results to the women of the country resulting therefrom; "so inadequate an amount of training in this most important part of medical practice is adverse to the public good and the highest interests of the profession." The petitioners, therefore, begged the Council to recommend to the examining bodies that each student shall attend a six months course of lectures on midwifery, puerperal diseases, diseases women and infants, that each should attend for six months a lying-in hospital, or general hospital with a maternity department at which clinical lectures are delivered and that each should be present at 50 labours and of these personally conduct 30. In addition that there should be an increased stringency of examinations giving a separate paper, a separate clinical and a separate oral examination in midwifery, in diseases of women and diseases of infants, "the plan usually followed of combining all three subjects in one paper not sufficiently testing the theoretical knowledge and the technical skill of the students."

The Royal College of Physicians of Ireland also petitioned the Council to take steps to increase the educational standard of midwifery among medical students, advising six months lectures in midwifery, puerperal diseases, diseases of women and infants, six months attendance at a lying-in hospital and the personal conduction of 30 labours under the supervision of a registered medical practitioner, instead of three as recommended by the Council of 1888.

In 1889 an Educational Committee had been appointed to consider the period of study and the question of systematic lectures and had reported that it recognized in late years a prominent demand in connexion with more attention to practical midwifery . . . and acknowledging the force of this demand, had come to the conclusion that a five years curriculum was necessary . . .and that the authorities should be responsible for the genuineness of the evidence afforded of the dilligence of the canditate, with respect to the number of cases in midwifery the examining body expects. That supervision meant conducted in the presence of the practitioner, and that if this interpretation be accepted there was little assurance

that this is acted upon. For the most part the certificate of any registered practitioner was accepted and reliance placed upon the good faith of the certifier. This report having been considered by the Council, the following resolutions were passed by that body in 1890. "That with the view of securing attention to practical work in education, the time devoted to the practical part of the examinations in all the subjects should be extended. That the curriculum be five years, that every student before entering for his final examination should have filled the office of dresser and clerk, that the fifth year should be devoted to clinical study."

In this year also the Council passed the following recommendations of the Examination Committee. "That the system of compensation as betweeen the different subjects of the qualifying examinations in medicine, surgery and midwifery stands condemned and that the marks for the written and oral at the final examinations should not in medicine and surgery exceed those for the clinical and practical." No mention of midwifery here. That it was strongly impressed with the necessity of insisting that candidates should have held one or more of the offices of clinical, obstetrical, out patient and post-mortem clerk and dresser to both in and out patients. That a percentage of 60 marks be required for a candidate to pass in one subject alone, supposing the pass marks to be 50 per cent.

These resolutions were referred to the licensing bodies. None of the replies mentioned the office of obstetric clerk except those from Ireland. In commenting on the replies the Education Committee remarks that the study advanced as obligatory on candidates was accepted by all except Oxford University, which by its Statutes did not prescribe any course of study or even hospital attendance, and London the Statutes of which allowed the student to select five out of the specified eleven subjects as essential by the General Medical Council, which led to the observation that although the Education Committee had no doubt that in practice the students of Oxford and London did attend the necessary courses yet "the position was unsatisfactory and that in the interests of the public it would be as well to sweep away the anomaly which makes it possible in Great Britain to obtain a licence to practise without the candidate having dissested, without having attended one case of disease or one case of labour."

Following the receipt of the petitions from Dr. Rentoul and the Royal College of Physicians, Dr. Glover moved the following resolution "That it is urgently necessary for the examining bodies to require of candidates for their diploma additional guarantees of practical education in obstetrics and that candidates must

produce evidence of attendance for three months in a lying-in hospital, or a maternity institution with arrangements for clinical teaching approved by the medical authority" and at the final examination "they be required to produre proof that they have personally attended at least 30 cases of labour."

An amendment was proposed that such experience should include that at a lying-in hospital or maternity institution, or twelve cases of labour conducted personally under the supervision of a registered medical practitioner recognized by the medical authority. This amendment was carried. A further amendment that the the Council adheres to its present recommendation of 1888 was lost, eleven voting for and one against. The first amendment was then put to the vote as a substantive motion and lost. For the second time, therefore, an important move to improve the teaching of midwifery was lost.

In 1891 Dr. Glover returned to the charge and moved "That it is urgently necessary for the examining bodies to require of candidates for their diploma additional guarantees of practical education in obstetrics, and that candidates at the final examination required to produce proofs that they have personally conducted at least six and been present at at least twenty four additional labours, and of having attended as pupils a lying-in hospital or the lying-in department of a general hospital, or a maternity institution with arrangements for clinical teaching approved by the examining body granting the diploma."

To this an amendment was proposed and carried which left out all reference to the cases of labour. On this being put as a substantive motion another amendment was proposed "that with respect to obstetrical practice the education of every candidate should include that he has taken part under properly authorized supervision in the conduct of at least 12 cases of labour, such participation to have been either as a pupil of a public institution, or as a pupil of a registered medical practitioner, but the supervision not in either case to be deemed sufficient unless the medical authority have expressly recognized it for the purpose." This was carried and on being put as a substantive motion a further amendment was proposed "That the Council resolve to adhere to its present recommendation of 1888." This amendment having become the substantive motion an amendment to substitute "or" for "and" was lost, after which the recommendation of 1888 was adhered to. This move, therefore, to improve the study of practical obstetrics again failed.

In the report of the Visitors to examinations in 1893 unfavourable comment was made on the Durham examination, in which

a candidate defined *accouchement forcé* as delivery with the forceps. Perhaps he should not have been blamed for this, it depends on his experience. The candidate who defined sterility, relative and absolute, as a woman who could not become pregnant passed. The Visitor at the Conjoint Examination in Ireland regretted that the defects he had pointed out in 1888 had not been rectified, although Dr. Cranny, who was the examiner then and now, had agreed that his criticism was very fair. A graduate of Cambridge having spelt midwifery with two f's, inflammation with one m, perfuse for profuse and readily with two d's and no a, passed. The examiners at the London University kept the phantom covered all the time, which the Visitor thought a very weak point, and he recommended the Oxford examiners to get a phantom as it was so useful for the diagnosis of presentations. The examiners replied that it was quite useless. The report on the examination at the Victoria University was that it was most thorough and and practical, and carried out in all its details with marked efficiency and care. The same could not be said for Ireland where the candidates at Dublin University told each other the questions or for the examination of the Conjoint Board which was just as bad as it was five years ago. In 1895 the Council considered the Education Report, and the replies received, which showed that midwifery should be made more practical, and that the number of cases in midwifery in which attendance is required is in some instances too small, "so small a number as six being considered adequate by some boards."

In 1896 the Council recommended that in regard to practical midwifery it was desirable that the alternative to three months practice in a lying-in hospital should be, "or to have been present at not less than 20 labours at least five of which shall have been conducted throughout under the direct supervision of a registered medical practitioner, including the puerperium," and that a certificate to this effect must be presented.

Many licensing bodies agreed to this recommendation but the Conjoint Board of England would not agree, as it was found by most London Schools impossible to carry out. The Irish Schools noted with regret that the requirements were far below those of the Irish Colleges.

In 1895 the British Medical Association forwarded a petition from its members which "viewed with deep concern and regret the recommendations of the General Medical Council that students should be admitted to the final examination who presented a certificate stating that they had conducted personally only three cases

of labour and had been present at only nine more and that in 1890 the General Medical Council had refused to alter this." The Council of the British Medical Association respectfully requested the General Medical Council to recommend that no student should be admitted to the final examination unless he has personally conducted at least 30 cases of labour under the direct supervision of a registered medical practitioner. This petition was referred to the Education Committee.

During the next eight years the arrangements at most of the examinations visited met with the approval of the Visitors, though the Visitor to Aberdeen did remark that the examination was well conducted in spite of the examiner demonstrating his teaching abilities as much as, if not more than, his examining powers.

In 1900 the British Medical Association forwarded a communication to the General Medical Council to the effect that, in view of the great advance in the science and art of midwifery and gynæcology during the last few years, the Council of the British Medical Association urges the General Medical Council that whenever possible the medical student should learn practical midwifery in a lying-in hospital or the lying-in ward of a general hospital and failing this, that every case of labour attended by the student should be under the direct supervision of a registered medical practitioner. The answer to which was "your wishes have been anticipated."

In 1905 some members of the Council noting that the reports on the examinations in midwifery were so satisfactory, became suspicious. The Education Committee had reported that it saw no reason to believe that the examinations now conducted by the majority of the qualifying bodies compensated for a course of study which was inadequate and drew special attention to the absence of a practical examination in many centres. It may be remarked that, in nearly all its recommendations, the Council when it mentioned a practical examination really meant a clinical examination. It goes on to say that an adequate clinical examination, even if the standard is reasonably low to start with, would bring about a great improvement in the teaching, study and practice of midwifery and gynæcology. This incited the President in his address to point out that important as is the maintenance of the standard of examinations in the various branches of physics, the sufficiency of the course of study in each branch is not less important and that the Council was responsible for its maintenance and that the Medical Acts enacted that,—both a course of study and examinations are necessary in order to ensure that qualified

persons possess the requisite knowledge and skill for the efficient practice of medicine, surgery and midwifery.

This led Sir John Williams to start the ball rolling and he tabled a motion that a "Committee should be appointed to enquire into the operation of the rules regarding the midwifery practice required for candidates for their qualifications." He gave his reasons for thinking that this was most necessary. A *questionnaire* was, therefore, directed to be sent to all teaching schools, and the replies were highly instructive.

In eight of the schools the students were allowed to attend cases of labour after having finished their anatomy and physiology. In one with materia medica in addition. In 14 after finishing anatomy, physiology and lectures in midwifery. That is, only 24 years ago, the students in 23 schools were allowed to take their labour cases before they had any knowledge of medicine or surgery. That in 20 schools the students had to deliver 20 women; in 10 schools three women; and in nine schools one woman. That in six schools it was obligatory for the students to attend the practice of a lying-in hospital; in 26 schools the students did not have to do this. That in two schools the student had to deliver six women under adequate supervision; in five schools five women; in three schools three women and in one school one woman. That the certificates of attendance in labour were not always based on a definite reason but on personal belief or recollection.

The conclusion arrived at, from an examination of the answers, was that the rules of the Council were not complied with in the majority of schools.

In 1906 a Committee of its Obstetric Fellows was appointed by the Royal College of Physicians, London, on the proposal, and under the chairmanship, of Dr. Francis Champneys. This Committee reported that the teaching of obstetrics and gynæcology had distinctly deteriorated within the experience of the members of the Committee. That students were unwilling to give the necessary time to acquiring a useful acquaintance with these subjects and that they were generally content with such a modicum of knowledge as they believed would enable them to pass the examination. Having passed the examination they seldom cared to add to their knowledge which soon became insufficient. That when in private practice they bitterly regretted the system with allowed them to qualify without a mastery of at least the principles of obstetrics and gynæcology. In the opinion of this Committee the main cause of such insufficient knowledge was the regulation which allowed students to come up for the examination in obstetrics and gynæcology one year after their second examination. The

Committee recommended various improvements in the teaching of students which are included in the following recommendations of the General Medical Council.

In 1907 the following recommendations were passed by the Council: —

1. That a student must attend not less than 20 cases of labour subject to the following conditions: He must have been a clerk and dresser and have attended lectures in medicine, surgery and midwifery. That he must have attended a lying-in hospital or the lying-in wards of a general hospital for three months and received therein practical instruction in the conduct of labour, under the supervision of the official medical officer, on not less than 20 cases and have had one month's attendance at a lying-in hospital or the lying-in wards of a general or poor law hospital, having conducted therein, under the personal supervision of the official medical officer, five cases. An amendment to make the number 15 or 10 was lost.

3. That the attention of the licensing bodies be called to the necessity in the public interest of instituting clinical examinations in the qualifying examination. It was only by such means that the safety of lying-in women and newborn children could be ensured. Many did not reply; others agreed.

In the Visitors' Report of this year Oxford University is reminded that the standard of midwifery of its candidates was not up to that in medicine or surgery and London that, in spite of many reminders, the candidates still had one examiner only in their *viva voce* examination.

Midwifery politics now quieted down for 12 years and then a Preventive Medicine Committee was set up to ascertain whether the curriculum was still sufficient to meet all that it needed with respect to preventive medicine.

Accordingly Sir Francis Champneys in 1919 moved "That an enquiry be addressed to the recognized teaching institutions asking how far they had been able to carry out the recommendations of the Council in 1906," and that their attention be drawn to the report of the Obstetric Section of the Royal Society of Medicine on the teaching in midwifery of medical students and graduates of London, and that they be asked to favour the Council with their observations thereon.

In 1920 the report of the Inspector in Midwifery states that candidates knew more about gynæcology than midwifery, and in the latter were more at home in discussing rare cases than common ones; that to attend 20 cases of labour no more fits a man to practise midwifery than examining the hearts and lungs of 20 women fits a man to practise medicine.

In 1922 and 1923 respectively the examinations at the Universities of London and Cambridge were declared insufficient, as there was no clinical examination, but that London had improved by appointing two examiners for the oral. The replies to the Council's enquiry were to the effect that many schools, especially the larger ones, embodied the principles of the recommendations in their rules and regulations; others had complied with them as far as possible. Many replied that the immediate provision of beds was impossible. A few institutions did not comply at all, including Middlesex, Kings and the Royal Free Hospitals, and several reported that they could not find the 20 cases for each student.

No further action was taken; the Council remarking that it could not issue orders which were unable to be carried out, as London was badly off for midwifery cases, the lying-in hospitals being founded for midwives.

In 1920, the attention of the training schools was again called to the recommendations of 1906, "in the hope that the present conditions, which in many ways can be improved upon, may be rendered sufficient and such as the Council will be able to regard as satisfactory."

In 1922 the Council adopted the following resolutions:—

1. That instruction in midwifery should include a period of at least two terms.

2. That systematic courses should be given in the principles and practice of midwifery and gynæcology.

3. That a student must study at least three months in the maternity department (one month at least he shall be in attendance in maternity wards).

4. That he must attend at least 20 cases of labour under adequate supervision and must not attend cases on the District till he has delivered five cases in the ward.

5. That he must attend antenatal and infant hygiene departments.

6. That he shall produce a certificate stating that he has personally attended the 20 cases under the supervision of the certifying officer, who shall state on the certificate his official position.

This is the state of affairs to date though I doubt whether these regulations have been fulfilled at all the schools. At any rate I know one Institution at which the students averaged eight cases of labour last year and only this year commenced to attend the prenatal, post-natal and child welfare departments with any regularity.

The importance of training the medical student in midwifery and diseases of women, just as thoroughly as he is trained in medicine and surgery, was recognized by the General Medical

Council, one may truthfully say, from the time it was called into being by the Medical Act up to the present day. The same cannot be said for the medical profession as a whole, in spite of the fact the teachers of midwifery and diseases of women have for the last 60 years, or more, been using every endeavour to obtain proper recognition for these subjects. These teachers have been as one crying in the wilderness, since except for that given by the General Medical Council they have not been supported either by their colleagues in other departments of medicine, or by public opinion. At long last public opinion has been roused and so we are faced with the position of locking the stable door after the horse has been stolen. That public opinion has been roused is due, not directly to the fact that medical students, up to the present time, have never been properly trained in midwifery, but indirectly to the fact that the maternal mortality and morbidity have not been lowered for the last 20 years. Thus there are now dealing with this subject from different standpoints, two Departmental Committees and a third composed of the Obstetric Fellows of the Royal College of Physicians of London, called into being at the suggestion of the Minister of Health.

It is a curious thing that those medical practitioners who turn their attention more particularly to medicine and surgery, should for all these years have belittled the urgent necessity of students being adequately trained in midwifery. The reason for such an attitude is difficult to understand, but it must charitably be attributed, in part at any rate, to ignorance of the immense importance of this subject to the community.

A member of the public, if he were asked to give his opinion on the present state of affairs, would say at once: "Surely this must be due to the teachers of midwifery. It is up to them to see that their students are properly trained." But just as it used to be impossible to make bricks without straw so is it impossible for teachers in midwifery to train their students properly in this subject unless and until its importance is fully realized by the medical profession as a whole, by the examining boards and by the public, and until the proper facilities for such a training are placed in the hands of the teachers by the authorities of hospitals with medical schools. It may be said, without fear of contradiction, that any improvement in the training of students in midwifery and diseases of women, and any increase in the facilities for teaching, have been entirely due to the teachers in midwifery and to the General Medical Council. It can well be said that this is as it should be, but those who may have the curiosity to study the history of midwifery training, and examinations in this subject, during the last 70 years

will find that these teachers had a very uphill fight in their endeavours to improve matters, in the great opposition of their colleagues at the hospitals, the authorities of these hospitals and of the universities and examining boards.

Again it may be said "Why has the General Medical Council not done more in insisting that the various regulations they have made since 1859 should be carried out. This Council has the power to insist on the compliance of the various teaching institutions and licensing bodies with its regulations, and if such are ignored, as they have been year after year, it can report the matter to the Privy Council and have the qualifying body deprived of its powers in this respect." In one sense there is no answer to this question, but in another the answer is quite complete. The General Medical Council has realized from the first that to strike a licensing body off the list is almost comparable to persuading a camel to walk through the eye of a needle. It did try on one celebrated occasion, but the unsatisfactory result of its endeavours, and the worry and disturbance resulting from its well meant efforts, further confirmed the impression it had formed from the first, that the best and easiest way to obtain compliance with its regulations was by one of peaceful persuasion, as can well be imagined from the account I have presented of its proceedings with respect to the teaching of midwifery and the qualifying examinations thereon.

It is a curious fact for these reasons. Midwifery and the diseases of women form one-third of all qualifying examinations for the medical student, and it is perhaps the most important of all three parts dealing, as it does, with the well being of those who supply the nation with citizens. Again, for some reason which its teachers can never understand, midwifery has always been regarded as a specialty in the hospital world and probably also in the minds of the lay public. It is no more a speciality than medicine or surgery, forming as it does one of the Trinity of medicine. The Medical Act draws, and knows, no difference between medicine, surgery and midwifery. It places them all on the same footing, a prospective medical practitioner has to pass a qualifying examination in all three subjects before he can be registered. If one looks at the list of departments in the various hospitals, either in their reports or on their notice boards, you will see in London at any rate, that midwifery is entered under the list of special departments. The London Hospital is a brilliant exception to this.

Again let us look at the *personnel* of the various Councils, Committees and Boards which make the rules and regulations for the training of medical students—including those for midwifery.

The composition of the General Medical Council has been as follows since it first started:—

TOTAL NUMBER OF MEMBERS ON THE COUNCIL SINCE 1858—215.

Physicians	100	(57 on the staffs of recognized training schools).
Surgeons	80	(45 on the staffs of recognized training schools).
Obstetricians	8	(7 on the staffs of recognized training schools).
General Practitioners	24	
Lay Representatives	1	
No record	2	

Less than 50 per cent (109) have been on the staffs of recognized training schools.

Names of the Obstetricians and Gynæcologists, together with the years of service on the Council.

Alfred Henry McLintock, M.D.	March 2 to October 21, 1881.
Sir James Matthews Duncan, M.D.	1883–1888
William Leishman, M.D.	1886–1893
George Hugh Kidd, M.D.	1886–1893
Lombe Atthill, M.D.	1889-1903
Sir John Williams, Bart., M.D.	1901–1911
Sir Francis H. Champneys, Bart., M.D.	1911–1926
Robert J. Johnstone, F.R.C.S.	1927–1930

It will be observed that for the first 25 years of its existence, there was no teacher of midwifery on the General Medical Council, although it was dealing almost every year with the training of medical students and the sufficiency or insufficiency of the examinations in midwifery and diseases of women held by the various licensing bodies.

It is fair to say that the great improvements in the teaching of midwifery which can be placed to the credit of the General Medical Council were due almost entirely to Sir John Williams and to Sir Francis Champneys. The Committee of Reference set up by the Royal College of Physicians, London and of the Royal College of Surgeons, England, to superintend all matters relating to examinations did not include a teacher of midwifery Lastly the Board of Management of these Royal Colleges which Board is entirely responsible, subject to the Comitia and Council of these two bodies, for the curriculum required for students prior to their entrance for the final Conjoint Examination in midwifery and diseases of women has never since its appointment in 1886, had a

single teacher of midwifery among its members. That which has been thought right as regards the training of students in midwifery has been left entirely to physicians and surgeons to determine. That this has been so is nothing less than a scandal. It may be said that the teachers of midwifery in London have had their chance when the various recommendations of the Board of Management have been brought before the Comitia or Council respectively. Apart from the fact that the Council of the College of Surgeons has never up till two years ago had such a teacher as a member, those teachers who are Fellows of the College of Physicians have had but little chance of improving the teaching of midwifery, owing to the unsympathetic attitude of many of their colleagues when this subject was being debated.

After years of strife the teachers of midwifery in London at last forced—and I use the word advisedly—the Conjoint Board of England to include a clinical examination for its diploma. Again and again the teachers were told that such an examination could not be held, although practically all other qualifying bodies had done so. At last such an examination was instituted at the commencement of this year, there has been no difficulty about holding it whatever and, from what I have gathered from the examiners, it has been the greatest success. How necessary such an examination was is evidenced by the experience of the examiners and of the students. The students, with exceptions, it was obvious had never paid any attention to the prenatal department of their hospital, for the very good reasons that at some hospitals such a department, properly officered, had but recently been set up, and the examining bodies had only recently insisted on such an attendance. The examiners were astounded at the ignorance displayed by some students in the methods of examination and the information which could be elicited thereby.

It has been argued by some that as regards midwifery the student must gain his experience after he is qualified, as he does in respect of medicine and surgery and that too much of his time must not be occupied with midwifery to the prejudice of his work in other directions. Such an argument is futile. In the first place his experience in medicine and surgery, even while he is a student, far outweighs that of his experience in midwifery and diseases of women. Before entering for his final examination a student is bound to serve the office of clerk in the medical department for nine months and dresser in the surgical department for nine months, during six months of which he has to spend a large amount of time every week holding instruments he will never possess and the names of which he may not know or will soon forget and watching opera-

tions which he will never be called upon to undertake and which, if he was, he could never perform. On the other hand, as regards midwifery and diseases of women he is obliged to serve the office of extern and obstetric and gynæcological dresser for a period of four months only.

In the second place, it appears to be forgotten, or perhaps not realized, that the position of midwifery-*qua* the newly qualified man is entirely different from that of medicine or surgery. General practitioners, as a body, do not practise surgery, but call in a surgeon or send their patients to a hospital. In the case of a medical disease the practitioner has, in nearly every instance, time to turn round, and if necessary he can call in a physician or send his patient to the hospital. On the other hand, the first day a medical man is in practice, he may be 'up against' a midwifery complication which requires his immediate attention if the life of the woman and her child are to be saved, and in which there is no time to wait for the assistance of an expert. It seems to be forgotten, more often than not, that an obstetrician is dealing at the same time with two lives, while the physician or surgeon is dealing with one at a time only. Should the practitioner wish to send his patient to a hospital he will find that although there are generally plenty of medical and surgical beds, and at any rate one can always be found for an emergency, he will be most fortunate if he can obtain a maternity bed. Moreover, quite apart from the question of emergencies, it is most necessary for the student, before going into practice, to acquire confidence in his powers of diagnosis and in any treatment he may recommend, and as regards midwifery this confidence can be obtained only by a thorough training in the maternity and gynæcological wards and in the prenatal, postnatal and infant welfare departments. The process of acquiring a knowledge of midwifery after starting in private practice is unsatisfactory, expensive and at times disastrous.

The teaching of midwifery and diseases of women presents many difficulties which do not obtain in any other branch of medicine. An adequate teaching in medicine, surgery, midwifery and diseases of women necessitates certain fundamental principles. The provision of set lectures is a moot point, some authorities laying great stress on these, others being of the opinion that they are of no service and that the student can better occupy his time than attendance thereat. All authorities are agreed, however, that a certain definite period should be spent in the study of these subjects, that sufficient clinical material should be available for such study so that the students may have ample opportunity of examining patients and that teaching at the bedside should be

regular and thorough and conducted by experts. Now in medicine and surgery there is no difficulty with respect to these fundamentals, but with midwifery and diseases of women it is quite another matter. Except in the case of lectures, the teachers of midwifery and diseases of women are severely handicapped. The regulations of the licensing bodies and the General Medical Council, as I have already pointed out, do not stipulate for such a period of study in midwifery and gynæcology as in the other two subjects, and, moreover, while the student is studying medicine and surgery he is unable to work in any other department and, therefore, his whole time is given to them, whereas during the period he is studying midwifery and gynæcology, this is not so and his knowledge of these subjects is acquired more by cramming than by experience. As regards clinical material in midwifery the student is at a great disadvantage. It is obvious that a pregnant woman, or one suffering from a gynæcological complaint, cannot be examined by so many students as one suffering from a medical or surgical one, nor has the student the repeated opportunities of examining the same patient as he has when in the medical or surgical wards or out patient departments. As a counterbalance to these disadvantages it might be supposed, by one having no knowledge of hospitals, that the deficiency mentioned would be augmented by the provision of an adequate number of beds for teaching purposes. On the contrary, what do we find? From time immemorial the number of beds at the disposal of the teachers of midwifery and gynæcology has been entirely out of proportion to the remaining beds in the hospital. The number of midwifery beds are so few, and of recent years only have there been any at all, that in many hospitals the regulations of the General Medical Council with regard to the number of labour cases cannot be complied with.

Whereas medicine and surgery can be taught, up to a point, most efficiently in the out-patient department, practical obstetrics can be taught only at the bedside. If there are insufficient beds women must go elsewhere for their confinement with the consequence that there are thousands of cases of labour in the Poor Law hospitals which are entirely wasted from the teaching aspect. Otherwise the women are confined in their own homes and the student has to attend most of his cases of labour, and get along as best he may, without any efficient teaching or adequate supervision. The gynæcological beds are so few that they are practically always filled with major cases and the minor cases of diseases of women, which are the most important, from the point of view of the student going into general practice, can seldom be admitted. This

deficiency of beds is due, I am sure, to the fact that midwifery has been regarded always as a speciality and not as a fundamental in the teaching of students.

Lastly, as regards bedside teaching, the teacher of midwifery is at a great disadvantage. He cannot attend on regular days at specific times, from the very nature of his cases. A physician and surgeon can look round his wards and decide what subject he will teach upon at his next visit; there are plenty of cases available. The teacher of midwifery never knows when a labour is to take place, more often than not in the middle of the night,—students will not be available for teaching even if he himself is present, and with all his private work it is unlikely that he will visit the hospital at night except for some emergency. In very few hospitals in London, at any rate, do the students see the Chief of the maternity department deliver a woman, and the knowledge he gains in this respect is obtained from the house surgeons or midwives, entirely the wrong people to teach him, whereas with respect to his training in medicine and surgery he can accompany his Chief in his work, almost every day. In most hospitals there are no prenatal wards, so that the chief of the department is deprived of the opportunity, of which he could easily avail himself, of teaching in this respect. Then as regards the bedside teaching in the gynæcological wards this must be more or less of a clinical lecture, since for a proper exhibition of the cases most of them require an internal examination, a method applicable to a very limited number of students.

If tumours be eliminated from consideration, then the largest number of women in a gynæcological ward are there because they have had a child. It has been calculated that the percentages of such cases varies between 65 and 75.

It is true that the methods of teaching midwifery at the present time—no doubt with marked exceptions—are quite inefficient, for it is a fact that the vast majority of beds for lying-in women are occupied by patients attended by pupil midwives. The most striking advance that has been made in general medicine in our time has been in way of prevention and the same should hold good, and indeed is beginning to be felt in midwifery. To ensure this the student must be trained thoroughly in prenatal and postnatal work and in infant welfare and it is only lately that such a training has been forced upon him. It is quite wrong having such departments officered by house surgeons or registrars, the Chiefs of such departments must be experts and they must attend regularly.

The responsibility of teaching students midwifery is a very great one, and we must not shut our eyes to the fact that having accepted

the position of teachers it behoves everyone of us to do all in our power to ensure that the teaching of our students is as efficient as it is possible to be and to use every endeavour to persuade the authorities of the universities, of hospitals and the Ministry of Health if necessary, to provide us with all the facilities which are absolutely necessary, and to insist on a curriculum in midwifery and gynæcology which will, at any rate, be as good as that provided for medicine and surgery. It is impossible to teach gynæcology apart from midwifery, their divorce leads only to chaos. We must teach our students to think and then act and not leave them to cram, a vice to-day almost comparable to that of drinking cocktails. As Sir George Newman has remarked; "it is not sufficient that students should get through their cases somehow." Students taking their lead from their Chiefs in other branches of medicine, and that either there was no provision for prenatal, postnatal or infant welfare experience, or even if these were available, that they were not bound to attend such departments, have inherited the idea that midwifery is of no importance, and that the chief goal to aim at is to get their 20 cases over as quickly as possible, and if opportunity presents itself, to pass the examination in midwifery first and, this being out of the way, to work seriously and energetically for those of medicine and surgery. And yet on these same students will be thrust as great a responsibility as that of their teachers. The vast majority of women are confined in their own homes and it is only with sufficient knowledge and with great attention and care to their patients before labour and after, and to the new-born children, that general practitioners can avoid betraying their trust to the State which is to ensure, as far as they possibly can, that the complications of pregnancy and labour shall be reduced to a minimum, that the health of women following childbirth shall be such that they can look after their households, bring up their children as they should be brought up, and so fulfil their part, which is an enviable one, for the good of the community – a Nation of A.1 citizens instead of C.3.

I will now suggest a scheme for the training of medical students in midwifery, in diseases of women, and in infant welfare, which appears to me would be sufficient, but which for real efficiency, must not be cut down. It will be advantageous to deal with the various points that present themselves under the following headings. Length of the medical curriculum, length of the training in midwifery and diseases of women, of residence in the maternity hospital, the number of women to be confined, the number of beds

necessary for the efficient training, attendance at the prenatal, post-natal, and the infant welfare departments, and lectures.

Length of the Medical Curriculum.

In my opinion the length of the medical curriculum demanded by all qualifying bodies, should be six years. In most of the great medical teaching centres of the world, the length of the curriculum is six years, and in a few it is longer, as for instance at Copenhagen, Koenigsburg and Oslo seven years and in Sweden nine years. Of all the countries Sweden has the longest medical curriculum, so that a student commencing at the usual age of 18, does not become qualified until he is 27, and if he intends to become a specialist he has to train till he is 30. The extra time, beyond that which is required in our country, is employed abroad in clinical work and although, as a fact, the student can pass his final examinations in five years, he is not allowed to start in private practice until he has spent another year in the hospital doing clinical work. There is much to be said for such a system.

At present there are three universities only which demand a six years training, Bristol, Oxford and Wales. Three universities, Leeds, London and Manchester require five and a half years, and the remaining universities and licensing bodies require five years. As a fact the number of years taken by the majority of medical students to qualify is at least six.

If one considers the length of the curriculum from another standpoint, namely from the passing of the second examination to the final, there is still sufficient time to allot a proper period for the training in midwifery and diseases of women, even if the curriculum is five years only. By lengthening the curriculum to six years there would certainly be, not only ample time available for such a training, but also there would be as much time, as at present, and even more, for the student to prepare, free of all the cares of office, for his final examination.

The regulation time a student must spend in his medical studies, between his second examination and his final, is 36 months. How this time is spent must vary in different hospitals, and the following table will show how it can be spent at my own hospital.

Out-patient clerk in medicine and dresser in surgery	3 months
In-patient clerk in medicine	6 ,,
In-patient dresser in surgery	6 ,,
Dresser to the ear, nose and throat department and to the orthopædic department, and clerk to the neurological department	3 ,,

Dresser to the ophthalmic department and clerk to the dermatological department	3	months ,,
Dresser to the maternity and gynæcological department	6	,,
Anæsthetic clerk and vaccination	1	,,
Fevers and mental diseases	3	,,
Leaving for preparation for final examination ...	5	,,
	36	months

It is true that this computation does not allow for any holidays on the face of it, but all students manage to take a yearly holiday during the occupation of one or other of these offices. If, however, the curriculum is lengthened to six years there is ample time for work and holidays. I often wonder whether it is really necessary for a student intending to engage in private practice, to attend every special department.

Students should not be allowed to attend any other departments than those of the prenatal, postnatal and infant welfare while engaged in their midwifery training. I can speak for Middlesex only, but our students attend twice a week in the ophthalmological department and in the Summer Term they also take out their mental diseases course, including as this does visits to Asylums, during the time they are following their midwifery and gynæcological training. Indeed long after I was a student men were attending in addition to these departments, the skin, nose, ear and throat departments and were also engaged in obtaining their anæsthetic and vaccination certificates while following their midwifery training, the gynæcological dressers taking it in turn to give the anæsthetic. It is important to note, in this respect, that when a student is holding his medical and surgical appointments he is not allowed, in any circumstances whatever, to count attendance in other departments and in fact, if he is doing his work efficiently, he has no time even if he so desired. Now surely that which is considered by the authorities as imperative for the training of students in medicine and surgery, applies with much greater force, to the training in midwifery and gynæcology.

Following the precedent set by old-fashioned ideas and the mistaken attitude of our colleagues, it is the training in midwifery that has to suffer, the time deemed sufficient for this subject being less than half that considered absolutely necessary for the study of medicine and surgery.

LENGTH OF THE TRAINING IN MIDWIFERY AND DISEASES OF WOMEN.

The length of this training should be fixed by all qualifying bodies at six months. It is true that in eight teaching centres six months training in midwifery and diseases of women is demanded, whatever the requisitions of the Examining Boards stipulate, but in most centres it is not. Such an important factor should not be left to the custom of individual teaching centres, or to the opinions of their respective honorary staffs. The period of six months should be compulsory. What do we find in our own country, in which I will include hereafter to save repetition, England, Scotland, Wales, Northern Ireland and the Irish Free State. In the records I have of 29 teaching centres, the time allotted in eight for the training of midwifery and gynæcology is six months, in four it is five months, and one four and a half months, in five it is four months, in ten three months and in one not mentioned. In those centres demanding six and five months such a period of training is obligatory for all students whether they are University students or no. What happens to those students in the remaining centres, the universities to which they belong requiring six or five months attendance, I do not pretend to know, most probably in the returns supplied to me such students are eliminated and they have to attend the required period, but I have known students signed up for an attendance which, if minutely enquired into, would not bear such an investigation. For instance, a certain number of students take out their maternity training at lying-in hospitals, live there for two weeks, personally conduct five labours, see 15 or more in addition, and are signed up for their maternity hospital attendance, be it one month or more according to the regulations, and as having personally delivered 20 cases. Moreover it is not unknown for a student to serve his appointment as extern clerk concurrently with that of gynæcological dresser. If then he 'takes' his confinement cases at a maternity hospital, and also attends one of the special departments on his return, it may very well be that the time devoted to gynæcology is practically *nil*. If the enlightened authorities in some centres deem it necessary for all their students to have six months training in midwifery and diseases of women and time is found for this, there appears to me no apparent reason why all teaching centres should not be compelled to enforce such a training.

It is very difficult to dissect the answers I have received from foreign countries with respect to this point. The question has been interpreted in different ways by different reporters, by a few as including the time for lectures, by most for clinical work only.

There can be no doubt, however, from an estimation of the time apportioned to lectures and tutorials, that the time allotted to the training in midwifery and gynæcology in nearly all these countries, is far greater than in our country, and in most of them must be a year or even longer. This question is further complicated, in some countries such as France, because the training in midwifery and gynæcology is divorced, the students taking their gynæcological training at a different time and institution, and in the United States where the calculation is mostly in hours.

If one were to send a *questionnaire* to all the recognized teachers of midwifery in our country I believe 100 per cent of them would say, without the least reservation, that midwifery should have the greater share of this six months. And yet what do we find in the centres officered by these same teachers. In nearly every one gynæcology is given the premier position; with a six months training it occupies according to the hospital 83.3. 66.6 or 50 per cent of the time, with a five months training 80, 60 or 50 per cent, with a four and a half months training 50 per cent, with a four months training 75 or 50 per cent and with a three months training 66.6 or 61 per cent. If the gynæcological beds were filled with cases comprising the minor diseases peculiar to women, or rather had an adequate share of such, there might be something to be said for this unfortunate custom of cutting down midwifery and stressing gynæcology, but not when it is remembered that most of these beds are filled with cases, in London at any rate, of a major nature, and that students are concerned during most of the time allotted to their midwifery training, with taking out the histories of such cases and looking on at operations which the majority will never be called upon to perform. The excess of gynæcological training over that of midwifery which obtains at most centres is quite wrong.

Out of the six months allotted, four months should be devoted to midwifery entirely, with its ancillary services of prenatal, postnatal and infant welfare. By such an extension only in the teaching of midwifery can we hope to improve the maternal mortality and morbidity. In foreign countries* it is quite evident from the returns I have received, that the teachers realize this great truth. Of the 38 professors who have dealt with this point 25 state that the office of gynæcological dresser is not-existent, one states that four months are required, two three months, one four weeks and in four two weeks, while it has to be remembered that in most of these clinics the period of midwifery study approaches one year.

*This term is used in contradistinction to Great Britain and the Irish Free State for statistical purposes.

When Should the Midwifery and Gynæcological Training be Taken.

The answer to this is the last of all. In other words all medical and surgical training, and the lectures pertaining thereto, and whatever training in the specialities may be demanded, should be finished absolutely before the training in midwifery and diseases of women is commenced. To any unbiased teacher, whatever department of medicine to which he may be attached, such a disposition should pass without a challenge. Surely no student can hope to study efficiently midwifery and gynæcology until he is grounded thoroughly in the principles of medicine and surgery; midwifery and gynæcology including medicine (with its services of bio-chemistry and bacteriology) and surgery applied to a specific part of the body. This is the only logical position to take up. And yet, as we have seen, in the past students were allowed to complete their midwifery training with a most imperfect knowledge of medicine and surgery, and in a few instances without even having passed their anatomy or attended any medical lectures. The medical and surgical lectures and training having been completed, the student will be able to devote his entire attention to the lectures and training in midwifery and gynæcology. Moreover the point that if his training in midwifery is placed last, the student will be handicapped in his medicine and surgery does not arise, since he would, during this period have ample time to increase his knowledge of the principles of medicine and surgery, in the prenatal, postnatal and infant welfare departments, and in the gynæcological wards and operating theatre.

Length of Residence in the Maternity Hospital.

This is a difficult question for London students at present, though if some arrangement as I will suggest later, could be made, this difficulty would disappear. With respect to the rest of our country this difficulty is not so apparent, since at most of the other teaching centres students have to attend maternity hospitals, which in many cases combine a gynæcological department. In my opinion every student should be compelled to reside for two months in a maternity hospital, or in some building in its immediate neighbourhood, or if his parent hospital has an efficient maternity department as regards its number of maternity beds, then in quarters provided on the spot or close adjacent by the authorities of this hospital. The reason for this, to me, is so obvious. During his medical training the student is able to see and examine an infinitely greater number of medical and surgical patients than he is of women during pregnancy, childbirth and after. By such a period of train-

ing as I have suggested, the sudent would be able to see, not perhaps so many cases as he should compared with his training in medicine and surgery, but at any rate far more cases than he does now, the number of which is entirely inadequate when one remembers the responsibility that will fall upon him directly he starts in private practice. Again if we consider the emergencies of medical practice and their relative importance to the general practitioner, apart from the treatment of hæmorrhage, it is fair to say that a student need not live on the premises to gain all the knowledge of these he will require in private practice. Medical emergencies do not arise particularly at night, on the contrary, in my experience, and I filled all the residents posts in my own hospital, besides others at the chest and childrens hospitals, more turn up in the day, and if any are admitted at night, the student is not handicapped thereby, he can gain just as much knowledge in diagnosis and treatment when he visits the ward next morning. As regards surgical emergencies, the same obtains, and in the casualty department alone there are infinitely more emergencies in the day time than at night. It is, however, a truism that more babies are born between 7 p.m. and 7 a.m. than during the rest of the 24 hours, and it is also true that the majority of midwifery emergencies are admitted between these hours. Now all midwifery emergencies cannot be studied like most of those of a purely medical nature, the morning after the night before. Obstetric emergencies are over, mostly for better or worse, by the time the student arrives in the morning, if of a mechanical nature, hæmorrhage or eclampsia. And what part do emergencies play in the life of a general practitioner? The surgical emergency is at once despatched to a hospital or nursing home or a surgeon is called in, day or night. The medical emergency is likewise despatched, or a physician summoned and an endeavour made to tide over the patient till expert assistance can be obtained. The midwifery emergency is in another category altogether for, even if the practitioner can obtain expert assistance or a bed in a hospital, so many midwifery emergencies are like the time and tide, they wait for no man, the doctor has to get on as best he can without being able to wait the arrival of expert assistance and is compelled to undertake the treatment of a condition which, more likely than not, he has never seen, and for which his training has not fitted him. If one or two lives are lost who shall throw the first stone at the doctor. Certainly not his teachers who have been striving year after year, to persuade their colleagues and hospital authorities to provide the requisite facilities so that the students can be taught efficiently. Granted that, if a man in general practice

is called upon to diagnose and treat emergencies, without adequate and expert assistance, it is the obstetrical emergencies, in the main with which he will have to deal, then it is obvious that he should be given every opportunity of learning how to tackle such emergencies during his training. As such emergencies must turn up, and as his period of midwifery study must be much shorter than that in medicine and surgery, the only chance the student has of acquiring a competent knowledge of midwifery is to live in a maternity hospital for a reasonable period, so that during the 24 hours of each day he may be on the spot ready to profit by any emergency or abnormality that is admitted.

Now if we turn to such facilities in London, what do we find? In two of these hospitals the period of residence is three months and in one hospital two months. This is certainly sufficient. For the remaining hospitals, in one it is six weeks, in thirteen the time is a month, in one it is three weeks, in four it is two weeks, in one a week, and in one no time at all. However, it would not matter within reason, how long one lived in, unless there were sufficient beds to allow the requisite number of cases to be admitted. Most cases of labour being normal, the provision of 10, 12, 15 or even 20 beds is entirely insufficient for the purposes under discussion, the Royal Free and University College Hospitals approximating only to the minimum which is necessary in this respect. Moreover, why in most cases does the student live in or near the hospital? Primarily, so that he may be within call for confinements on the District where most of the cases of labour he is supposed to attend may be found, and secondarily so that he may be able to fulfil the requirements of the General Medical Council, of personally attending five cases of labour in the wards under expert supervision. In the provinces and other parts of the country, with the exception of Sheffield which demands three months residence and of Bristol which stipulates for six weeks and of Glasgow where the students, before they are allowed to attend cases on the district, stay in hospital from 8 p.m. to 11 p.m. for ten weeks, the period of residence averages one month. Those parts of the country, other than London, however, have the advantage over this city in that their students are living in maternity hospitals in which there are an adequate number of beds, so the opportunities of studying emergencies and abnormalities are materially increased. But such residence is not concerned with these events only. It is by living in a maternity hospital, or in a hospital with a sufficiency of maternity beds, that students can learn thoroughly the practice and art of midwifery. During this period their studies should consist of clinical lectures delivered by competent members of the staff,

in visiting the wards regularly with the chief of the department, perfecting themselves in the aseptic and antiseptic routine of midwifery practice, watching carefully the delivery of women, and, when, in the opinion of the chief they are quite competent, delivering a certain number of women under expert supervision. During this time they will be able to follow the puerperium of the patients regularly and carefully every day, a thing they are unable to do properly in London, with the facilities at present available, and with the rules of most hospitals that the patient on the district need be visited on certain specified days only, the first three and then more or less spasmodically. And what a visit it is! Does every student measure the height of the uterus every day, or at every visit does he examine the breasts, pads and so on, does he enquire carefully into the state of the child and of its feeding, with relation to which he knows little or nothing? Is not the student, more often than not satisfied if the pulse-rate and temperature are normal and the baby is being breast fed, whether it is progressing in health or no? Are not these things left more often to the extern sisters, pupil midwives or extern nurses? In foreign countries, as far as I can judge, the students are not much better off in this respect than ours, probably worse. With the exception of Lund with its four months residence and Amsterdam with its two months, most of the students reside in the hospital long enough only to complete their regulation number of labour cases, which in many instances is unbelievably small. On the other hand, although the students do not reside for any length of time within the hospital, their extended period of duty in the maternity department may, in some ways, compensate for such a deficiency.

During the two months which I suggest, each student should be apportioned a certain number of patients as is the custom in the medical and surgical wards, and not only be accompanying the chief on his round, listening or not as the fancy takes him, and wondering how soon he can get off, or whether there will be time to play cricket, or football as the season determines, or golf. Not that I am adverse to such amusements, I took part in them all in my time, and all work makes Jack a dull and unfit member of the community. But this period of two months is quite another thing, for during his medical curriculum the student will have ample time to indulge in such pursuits, and if he be wise he will take advantage of them. The period, however, in which he can study midwifery is far too short anyhow, and for this reason, if for no other, such a study should be intensive. The greatest attribute of a man who intends to practice midwifery is to know when to leave patients alone. Such knowledge can be

acquired only by residence in a maternity hospital, or hospital with a sufficiency of maternity beds, and when all has been said and done, who is going to be called upon, in the great majority of instances, first to treat cases of abnormal midwifery? The general practitioner.

The Number of Beds Required, Efficiently to train the Student.

This is a very important point. There is no question, I understand, in most parts of our country, other than London, that the maternity hospitals at which the students are trained, have more than sufficient beds. London, however, is quite differently situated. There were 488 students in this city who were trained in maternity departments with a maximum of 47 beds and a minimum of 10. If, as some authorities maintain, 20 beds are sufficient, then there are five hospitals with medical schools only with such a provision, the remaining seven averaging 12 between them. While it is quite obvious that any number of beds under 20 is quite useless for the purpose in view, an experience of 16 years at the City of London Maternity Hospital has impressed me with the fact than any number under 50 is of very little more use. I am talking now of the number of beds in relation to the opportunities which will be presented to the student of observing the abnormalities and difficulties of pregnancy and labour, and not of the number of beds which, with an adequate district, will suffice to give each student his 20 cases. No doubt there are every week in our country many cases of abnormal pregnancy and difficult labour, but the number which is likely to be admitted to one centre during the year is not so very large. The fewer beds there are, the less chance is there of such cases being admitted. It is obvious, therefore, that a teacher must have a definite amount of clinical material at his disposal, if the student is to be efficiently taught. But this is not the only point. The Report of the Department Committee on the Training and Employment of Midwives advocates a National Maternity Service. Under this scheme, if it is carried out, a large number of medical practitioners with some special knowledge of obstetrics will be required. The majority of such practitioners will not be able to spend long years studying the science and art of obstetrics; as anyone who proposes to practise as an obstetric surgeon is bound to. Those practitioners, therefore, who wish to qualify for such positions will have to take out a course of study at hospitals with a sufficient number of beds to ensure that, at any rate, they will see the commoner difficulties and abnormalities of obstetric practice. For the present, suffice it to

say there is one hospital only in London with a medical school for men which might provide such a service, though in my opinion 47 beds is not nearly sufficient.

It must be remembered that the maternity departments at the London hospitals with medical schools, were not instituted to give the students such a training as I have suggested but in order that the hospitals could comply with the regulation of the General Medical Council, that the student must deliver five cases in a maternity hospital or maternity ward of a general hospital before attending his 15 cases on the district.

Number of Women to be Confined.

The regulation of the General Medical Council, which specifies how many cases of labour a student must attend and with what precautions, is a dead letter, is ignored by the majority of teaching centres every year, and has been ignored ever since the Council first issued it. It might be said, by those not in the profession "why does the General Medical Council not insist on this regulation being complied with?" The question is quite easy to answer. It is impossible to comply with it in the present circumstances. The authorities of the teaching centres could just as well turn round and say to the Council "Why do you not strike those qualifying bodies off the list who fail to insist on the teaching schools fulfilling your regulations?" The answer is just as easy. "We can't!" Now if you were to ask the various teachers of midwifery whether each of his students personally delivered 20 cases I should not be surprised if they were to answer, and quite honestly, "yes," an answer which would be due to the fact that they had never taken out accurate statistics. In Table IV will be found a list of the number of cases confined in the various teaching centres throughout our country, commencing with the greatest number and diminishing very rapidly. It will be seen that out of 29 such centres in seven only was the number 20 or over, in two 19, in one 18, in one 13, in six 12, in two 11, in four 10, in one nine, in one eight, in one seven, in two five, in one three. Respecting the regulation number of five cases in a maternity hospital or ward, things are better, seven only falling below this level. Yet every one of the students has been signed up by someone as having complied with the regulation. What a farce, and I mean by someone not necessarily the chief or any one connected with the department. The Dean of the Medical School, by some licensing bodies is allowed to sign the certificate on the face of which is stated that it is within his knowledge that the student

has personally delivered 20 women under adequate supervision, and that he, the Dean, knows that the student has made the necessary abdominal and other examinations. "Can you beat it?" as our American cousins would say. The reason why the student cannot obtain his regulation number of cases is too well known to us all. There are not sufficient cases to go round. This is due to four factors. The first, in London especially, because so many of the dwelling places, of that class of people to which we have to look for cases, have been demolished to make room for factories, offices, or for street improvements, and these women accordingly have to go into Poor Law Hospitals. The second because of late years an increasing number of women have preferred institutional treatment and as there are not sufficient maternity beds in the general or maternity hospitals they enter the Poor Law Hospitals. The third because most of the hospitals with maternity wards cannot afford to maintain them without training pupil midwives who, while thus available for nursing the patients, nevertheless have to be given 20 cases of labour.

At Middlesex Hospital we went into this question and found, after the most careful calculations, that if we did not train an adequate number of pupil midwives it would cost the hospital at least £1500 a year, over and above the fees obtained from that number of pupil midwives which was absolutely necessary to nurse the patients, even with the help from the nurses in general training, unless one employed nurses with the C.M.B. certificate, when the cost would have been far more.

Fourthly, and this is certainly the most important factor, the pupil midwives in the Maternity Hospitals and Poor Law Hospitals of London and in other parts of the country absorb by far the largest number of confinements and the students are swamped out.

In the five Maternity Hospitals of London, 12,872 women were delivered or attended by pupil midwives out of 13,530 cases, 109 students being given 658 cases in addition. Moreover it is a common practice in these hospitals for a student to have his certificate signed up after having personally delivered six women and looked on at the delivery by the pupil midwives, or of a fellow student who may chance to be present, at not less than 14 more, complete the regulation number. When a comment is made on this custom, and I have made it more than once, the reply is that there would not be sufficient cases for the pupil midwives if the students were given their full quota and that the maternity hospitals were founded to train midwives and not medical students which is true. It is claimed, by some, that a student is better educated when living

in a maternity hospital for two weeks and being present at a large number of labours, conducting five only, than if he delivers 20 women without such advantages. I presume that if the General Medical Council had agreed with this contention it would have made such a training an alternative. Moreover, it must be remembered that the majority of students who take their training at the maternity hospitals in London, live in for two weeks only, and are signed up as having had one months hospital experience.

In London 488 medical students took out their cases, in 1928, at 12 teaching hospitals and 109 at two maternity hospitals. The number of cases required for these 597 students, at 20 cases each, was 11,940. These students obtained 8,712 cases only, being 3,228 cases short, having a common average of 14.5. If, however, 2,280 cases from the Royal Free and University College hospitals, with maternity hospitals of their own, and 94 students, are eliminated, the remaining 503 male students were 3,628 short, having a common average of 12.7.

The number of women confined by pupil midwives in the teaching and maternity hospitals of London, eliminating the Salvation Army Maternity hospital, which is a Mission hospital, was 15,234. The number of women confined by pupil midwives in the Poor Law hospitals of London was 8,899, so that the total number of women confined by pupil midwives, apart from those of the Salvation Army, was 24,133. Eliminating the Clapham Maternity hospital, the number of pupil midwives for which was unobtainable, 718 pupils had an excess of 8,517 cases, while the male students were 3,628 short. I have not the number of women confined in the Poor Law hospitals for the rest of our country.

From these statistics it is obvious that the pupil midwives are getting not only far more cases than the medical students, which may be quite right since there are more of them, but they are also obtaining more than the regulation number required by the Central Midwives Board, moreover, and this fact is most important, a large percentage of pupil midwives are never going to practise midwifery, and are taking the C.M.B. certificate as an extra qualification to help them in their application for higher posts in the nursing profession.

In my opinion every student should personally deliver 30 women, the number suggested in 1890 in the petition of 337 general practitioners, and in the same year by the Royal College of Surgeons, Ireland, to which number Dr. Glover tried to persuade the General Medical Council to agree, but failed. In 1895 the British Medical Association suggested the same number. No doubt such a number is all very well in theory but the difficulty is to obtain it in practice. Taking 1928 as a basis, and London only,

three of the teaching schools provided 20 cases or over, and one only could have provided 30 cases even if there had not been any pupil midwives. An inspection of the minutes of the General Medical Council discloses the fact that there were some members who expressed the opinion that it is not so much the number of cases that counts but how much the student can learn from the cases allotted to him, and maintained that the student will obtain far more benefit by following through very thoroughly, under expert supervision, from the start of labour till their discharge from the hospital six or eight cases, making adequate notes of the progress of the mother and baby, than by attending 20 or 30 cases, in what I may call the usual way, and you all know what I mean by this. There is certainly more than an element of truth in such a contention, such a number as six or eight, however, is not sufficient for any student to gain an adequate knowledge of midwifery before starting in private practice, since there would not be sufficient cases for him to study the usual abnormalities and difficulties of obstetric practice. If, however, my suggestion of a two months residence in a maternity hospital, or hostel attached to it, was insisted on, then each student would have all the experience he required.

From the statistics I have gathered the 30 cases could be obtained by an arrangement with the London County Council, if this body could be persuaded to apportion one, or part of one, of its hospitals for maternity cases only, which hospital would have to be staffed by experts as the teaching of medical students could not be left in the hands of the normal *personnel* of a Poor Law Hospital or in those of sister midwives, however experienced. A difficulty arises here with regard to the maternity departments of the teaching hospitals. It is unlikely that every hospital would be prepared to scrap its maternity beds. If this difficulty cannot be surmounted what would be the position if it is decided that 20 cases only are sufficient? As I have already pointed out, there are four teaching hospitals in London which can comply, both with the spirit and letter, of the General Medical Council's regulations, providing each student with 20 cases, including five or more in their maternity wards. Eliminating these hospitals, there remain 414 students requiring 8,280 cases. The number of women confined in the City Road and Queen Charlotte's hospitals and the General Lying-In hospital was 8,121. If these 414 students were accommodated at these three hospitals, they would have 19.6 cases each, and, with Queen Charlotte's enlarging, more. There are three ways in which these three hospitals could be utilized for medical students. The first by nursing the hospital patients with

nurses who had gained the C.M.B. certificate, the cost of this I fancy would be prohibitive. The second, following the St. Bartholomew's plan, of paying for the required number of nurses to take this certificate elsewhere, on the understanding that they gave their services, when they had obtained their certificate, for six months to the hospital. This would be an expensive plan. The third, following the custom of affiliation recognized by the General Nursing Council for nurses in general training, would be for these three maternity hospitals to be affiiliated with the London County Council Hospital, so that the pupil midwives could 'take' their cases at this hospital and then return to the maternity hospitals to nurse the patients and for their further experience. I have no idea what this would involve in terms of pounds, shillings and pence, or whether the fees of the pupil midwives would cover the cost. The London County Council would give the training and board and lodging while the pupil midwives were taking out their 20 cases, and the maternity hospitals could charge a sum for board and lodging afterwards. If the general hospitals could be persuaded to agree to this plan their present maternity beds might be allocated for prenatal complications, and otherwise there would be no difficulty in disposing of the beds, a certain number of which could be allocated to the gynæcological department which in most hospitals is very short of beds. If, however, the Boards of the three hospitals would not agree to such a course, or alternately, the London County Council might be persuaded to allot one of its hospitals as a maternity centre for medical students. As regards the rest of the country, similar arrangements could be made with the County Council Hospitals, when necessary.

The practise in foreign hospitals, with respect to the number of women a student has personally to attend in their confinement appears, to our way of thinking, very bad and inadequate. Out of the 61 replies I have received 20 have no regulation as to the number of cases to be delivered, six give the number as 20, in one 15, in 12 20, in two 10, in one eight, in four six, in one five, in seventeen four, in one three and in five two. As will be seen from Table viii the average number of confinements personally conducted by the student in most of the teaching centres is extremely small, and at a few centres he is allowed to look on only, there being far too many students for the number of cases available.

I realize that many objections can be raised to my suggestion that these three maternity hospitals should be allocated for the teaching and practical experience of the London students. All three hospitals were, I believe founded, among other objects, for the teaching of pupil midwives, so that their Charters might have

to be altered. Then there are the governing bodies to contend with and some, or all of these might object to students, as a body, being trained therein, an objection which I believe was raised by some members of the Glasgow Maternity Hospital in similar circumstances. Then the argument can be advanced that these hospitals provide the best teaching centres for pupil midwives, and as it is proposed to raise the standard of such teaching, to send the pupil midwives elsewhere for part of their training would be a retrograde step, and one might meet opposition from the Central Midwives Board. This difficulty could, however, easily be surmounted by having expert teachers at the London County Council hospital. Again as nearly all the patients in maternity hospitals pay something towards their treatment, many might object to medical students attending them and so the number of women seeking admission at these hospitals might decrease each year. It is certain that each hospital would have to have a resident expert, similar to, though not of such high standing as that of the Master of the Rotunda. I do not think, however, that this would interfere with the professional status of the members of the Maternity Staffs of the General Hospitals, as they would attend regularly for teaching purposes. It is true that most of these objections would be surmounted by the establishment of a large maternity hospital by the London County Council. However, it is certain that as far as London is concerned, some better provision must be made for its medical students, and although at all three hospitals there are a certain number of excess cases, these are not sufficient to provide the necessary material.

The Certificate.

The certificate, which must be provided by each student, should be carefully drawn up so as to include spaces for the name of the patient, address and date of delivery, with additional spaces for inserting the period of training in prenatal, postnatal and infant welfare work. It is impossible for a pupil midwife to enter for her examination without having attended 20 cases, and yet a large number of students were signed up in 1928 as having attended 20 cases when they had attended far less. With a form of certificate as I suggest such a forgery would be an unlikely occurrence.

I think also that it would be a good plan for students to be compelled personally to sign up, in a register kept by the chief of the clinic or sister, their attendances at the prenatal, postnatal and infant welfare clinics, their attendance thereat being of supreme importance and not to be eluded.

Prenatal Training.

The greatest advance that has been made in medicine, in our time, has been on its preventive side yet, until the last few years, one might say as regards midwifery practice, this preventive side has been practically neglected. The preventive treatment in midwifery is correctly named the prenatal treatment, since it is by such treatment only, that one can hope to forestall emergencies during labour, or combat diseases peculiar to pregnancy. Now as fas as the average student is concerned, the prenatal department was of no particular interest unless, and until, a clinical examination formed part of his final examination in midwifery. The students working for the examinations of the Conjoint Board of England and of the Cambridge University for instance, took no interest in the prenatal department till last year, when after repeated exhortation on the part of the Obstetric Fellows of the Royal College of Physicians London, the Board of Management arranged for the first clinical examination in midwifery to be held in January 1928, and the Cambridge Board of Medicine held, successfully, its first examination, of this kind, in December. Notice having been given that such an examination would be held, the men queued up at the prenatal clinic, as many of their female friends do the first night of an opera. I need not, in an audience such as this, stress the fact that the more care that is given to prenatal work, the less complications of labour will eventuate and more lives will be saved in the obstetric wards, in the homes of the patients and in the gynæcological wards and thus the maternal mortality and morbidity must be lowered. More children will be saved; a larger number of efficient citizens will be produced for the good of the nation and much suffering and incapacity will be avoided. Moreover, maternal mortality must not be considered only in terms of puerperal sepsis. The toxæmias, the cause of accidental hæmorrhage in 75 per cent of cases; heart and other diseases, which account for a certain proportion of deaths and incapacity, all require the most efficient prenatal and postnatal treatment. The department should be under the charge of one of the members of the Honorary Staff, and not under that of the registrar or house surgeon as has happened before now.

In other parts of our country, prenatal treatment has been followed for many years by the students, since I believe that every Examining Body, with the exception of the Conjoint Board of England and the Universities of Cambridge and Liverpool, has held for years a clinical examination in midwifery. The period of training required by the different medical schools varies somewhat from four to 24 weeks, averaging 10 weeks. The majority of the

foreign centres have a prenatal department, but in 18 the students are not bound to attend and in most of them do not. In our country all the teaching centres have prenatal departments.

Postnatal Training.

It is obvious that the great importance of postnatal training has not yet been sufficiently realized, neither may I say the importance of a postnatal department, if one may judge from the records to date. Out of the 29 medical schools there is no postnatal department in 20, and therefore I presume that the students have no postnatal training.

I believe such a department to be of great consequence. There are diseases due to pregnancy, such as the toxæmias, and diseases such as heart and renal disease, which are made worse by pregnancy. The victims of such conditions are apt, after they have been confined, to pay but very little attention to them until they become very ill. Their family and house have to be cared for and the patients cannot be bothered, or have no time, to attend the hospital and so matters go from bad to worse until they become so ill that, perhaps, little can be done for them or they again become pregnant and the risk that they will then run will be enormously enhanced. Some of these patients do not seed advice till the pregnancy is far advanced when, as a fact, it should have been terminated much earlier. A postnatal department can do a great deal for these patients. If they have been confined at a hospital, they are much more likely to return because they know the institution, the nurses and sisters and feel at home in attending the hospital where probably they were happy and so well looked after. A good deal can be done for certain conditions such as displacements, subinvolution of the uterus and so on, which taken in time may prevent life-long invalidism. It is impossible to estimate the number of women who are handicapped in their future activities by ill health, even amounting to permanent invalidism. Thus the well-being of a vast number of families is seriously affected. It is true that the majority of cases of maternal mortality and morbidity are due to puerperal sepsis, the toxæmias, and hæmorrhage, yet there is a mortality of 10 per cent or so from associated diseases and of these heart disease accounts for a major portion, moreover, if a patient with heart disease passes through pregnancy safely her condition afterwards is often much worse than before, and such patients want watching most carefully. A postnatal department will bring such cases before the student and he will learn that a great deal can be done for these women if only they attend for treatment in time. As regards the

postnatal department, the best place to hold it is at a general hospital, because the officer in charge can transfer the patient, if necessary, at once to whichever department he considers the best, and that department will be on the spot. This is unfortunate in some ways because as I have stated women will be more likely to seek advice at the hospital at which they were confined and at which they attend the infant welfare clinic. However, a postnatal physician could be attached to the three maternity hospitals, and as he will surely be on the staff of a general hospital, he can transfer the patients to it if necessary. Most women have not the time to attend a hospital repeatedly, even if they are ill, especially if they are keen on taking the child to an infant welfare department. If the two departments are linked up many more women would attend the postnatal department when necessary.

In the foreign centres 16 only out of 56 have postnatal clinics which the students must attend, and there are four with postnatal departments at which they do not have to.

Infant Welfare Training.

I suppose that it may truthfully be said that not one student in a hundred, who started to practice, until recent times had the least idea of all that is comprised in the terms infant welfare or infant hygiene. The reason is not far to seek. It was not till 1922 that the General Medical Council issued a regulation to the effect that every student should have some training in infant hygiene, and it may be since then the various examining bodies have demanded such a training. As far as I can understand, however, this regulation, like that of the 20 cases has remained more or less of a dead letter, if one is to assume that for such a training there must be an infant welfare or pædiatric department. Out of 29 hospitals with medical schools 14 have such departments, and the importance of such training cannot be exaggerated. There would be no difficulty in the student putting in a sufficient number of attendances at such a clinic during his six months' training. Moreover it must be remembered that the only chance the student will have of learning something about the illnesses of the new-born and during the first year of life and the difficulties met with in infant feeding and how to surmount them, will be in such a department. If more questions were set in examination papers with relation to this period of life, it would be all to the good.

In the foreign centres 23 have infant welfare clinics, in three the students do not attend and in six the attendance is not obligatory. In nine other centres the clinic is held at the children's hospital, pædiatric clinic of the university or in the town bureau.

Lectures.

I have but little so say concerning the value of systematic lectures. Opinions are so divided among the teachers of midwifery, some thinking that they are of no use, others that they should never be omitted. During the six months to be devoted to midwifery and diseases of women, there would be ample time in which a course of lectures, either systematic, clinical or both could be provided.

From the replies received it is evident that at most of the foreign centres the greatest stress is placed on the value of systematic and clinical lectures, and these appear to occupy a great deal of the student's time in his training in midwifery and diseases of women.

The New British College of Obstetricians and Gynæcologists.

In 1924 William Fletcher Shaw, Professor of Midwifery at the University of Manchester, conceived the idea of a College devoted to midwifery and diseases of women, which he trusted would, in time to come, hold the same dignified position as the Royal College of Physicians, London, which is 411 years old, and as the Royal College of Surgeons, England, which is 129 years old. Having turned the project over in his mind for some time Professor Fletcher Shaw mentioned his idea to some of his friends in November of that year, among whom was Professor Blair Bell of Liverpool. Professor Fletcher Shaw and Professor Blair Bell then brought the project to the notice of the Gynæcological Visiting Society, after which the remaining teachers of midwifery in England, Wales, Scotland, Northern Ireland and the Irish Free State were invited to support the scheme, which support was forthcoming at once in practically every instance. Due mostly to the efforts of these two professors, the Board of Trade in September 1929 granted a licence, without the word Limited, to the British College of Obstetricians and Gynæcologists. In the course of its application to the Board of Trade the proposed College had a very stormy passage but survived with flying colours. This brilliant conception of Professor Fletcher Shaw certainly marks a new era in the history of midwifery and is bound to be of great service to the community and to the medical profession.

For answering the *questionnaire* I sent out my very sincere thanks are due to Mr. Banister, Dr. Barris, Professor Brown, Mr. Cook, Mr. Dodd, Mr. Gilliatt, Mr. Hedley, Mr. Holland, Professor Dame Louise McIlroy, Mr. Roy, and Mr. Stevens of the *London Medical Schools;* Professors Oldfield, Miles Phillips, Rayner, Fletcher Shaw, Beckwith Whitehouse, Doctors Gemmell and Farquhar Murray of the *Provincial Universities;* Dr. Strachan of Wales; Professors Hendry, Johnstone, McGibbon, McKerron of the *Scottish Universities;* Professor Lowry of *Northern Ireland;* Professors Healy, Morris, Kearny, Bethel Solomons, *Irish Free State,* to the Matrons of the Maternity Hospitals, to the Medical Officers and Matrons of the Poor Law Hospitals.

Also to Professors Heinrich Eymer, E. Knauer of *Austria;* Professors Brouha , Hans Daels, Schockaert of *Belgium;* Professor Stamateff of *Bulgaria;* Professor Hendry of *Canada;* Professor Josef Jerie of *Czechoslovakia;* Professor Gammeltoft of *Denmark;* Dr. Mahfouz of *Egypt;* Wichmann of *Finland;* Professors Brindeau, Bué, Delmas of France; Professors Döderlein, Esch, Füth, Gauss, Gragert, Hellmuth, Heynemann, Haupt, von Jaschke Küstner, Oettingen, Seitz, Schoenholz, A. Wintz, Zangemeister, Director Nürnberger and Dr. Yardler of *Germany;* Professors Koener, van Rooy, Zaddmenaar of *Holland;* Professors Tóth,Sciniardekmy, Vieniry of *Hungary;* Professors Green-Armytage ,Lieut.-Col. Hamilton and Colonel Hingston of *India;* Professors Alfieri, Cova, Gaifaemi, Mangiagalli, Pestalozza of Siena University of *Italy;* Professor Essen-Möller of *Sweden;* Professors Labhardt, Guggisberg, Walthard of *Switzerland;* Dr. Rodiles of *Mexico;* Professor Brandt of *Norway;* Professor of Midwifery, University of Cluj, *Roumania;* Professor Gordon Grant of *South Africa;* Dr. K. Teufik of *Turkey;* Professors Cogill, Grayward, Piper, Rice, Polak, Schartz, Watson, Whitridge Williams of *United States of America;* and to Mr. King of the General Medical Council. Many of these Professors most kindly taking a great deal of trouble in amplifying their answers.

The *questionnaire* was sent also to the following universities but no reply was received: *Argentine,* Buenos Ayres, Cordova. *Austria,* Vienna. *Belgium,* Brussels. *Bolivia,* Le Paz, Sucre. *Brazil,* Bahia, Behen, Bello, Horizonte, Curityba, Porte Algre, Recipe, San Paulo. *Canada,* Montreal, Quebec. *Chili,* Santiago. *Columbia,* Bogota, Cartagena, Meadellij. *Czechoslovakia,* Bratislavia, Byrno. *France,* Aix, Alger, Bordeaux, Caen, Grenoble, Lyons, Nancy, Poitiers, Tolouse. *Germany,* Berlin, Breslau, Goettingen, Kiel, Rostock, Tubingen. *Greece,* Athens. *Holland,* Utrect. *Hungary,* Szeget. *Italy,* Bologna, Cagliari, Catania, Firenze, Genova, Messina, Modena, Napoli, Padova, Parma, Perugia, Pisa, Torino, Sassari. *Latvia,* Riga. *Lithuania,* Korno. *Mexico,* Guadalajára, Merida, Morelia. *Poland,* Bohrin, Cracow, Lwow, Poznau, Warsaw, Wino. *Portugal,* Coimbra, Lisbon, Oporto. *Roumania,* Bucarest, Jassy. *Spain,* Barcelona, Cadiz, Granada, Madrid, Salamanca, Santiago, Seville, Valladolid, Valencia, Zaragoza. *South Africa,* Cape Town. *Sweden,* Stockholm, Upsala. *Switzerland,* Geneva, Lausanne. *Venezuela,* Caracos, Los Andes and to the *Japanese* Consul in London *Serbs, Croats,* and *Slovenes,* Belgrade, Zazreb, Ljablpana.

TABLE I.

TRAINING IN MIDWIFERY AND DISEASES OF WOMEN AT THE TEACHING CENTRES IN ENGLAND, WALES, SCOTLAND, NORTHERN IRELAND, IRISH FREE STATE—EXCLUDING LECTURES.

1928.

Time allotted to Midwifery and Diseases of Women	Midwifery	Diseases of Women	Prenatal	Post Natal	Infant Welfare	Forceps
6 months	—	—	6 months	No	No	No
6 ,,	1 months	5 months	4 ,,	No	3 months	Yes
6 ,,	2 ,,	4 ,,	2 ,,	No	No	No
6 ,,	3 ,,	3 ,,	3 ,,	No	No	?
6 ,,	3 ,,	3 ,,	1½ ,,	No	No	No
6 ,,	3 ,,	3 ,,	?	No	?	Yes
6 ,,	—	— ,,	6 ,,	6 months	6 ,,	No
6 ,,	—	— ,,	3 ,,	3 ,,	3 ,,	Yes
5 ,,	2 ,,	3 ,,	2 ,,	No	Later date	No
5 ,,	1 ,,	4 ,,	2 ,,	2 ,,	2 months	Yes
5 ,,	2 ,,	3 ,,	3 ,,	3 ,,	No	Yes
5 ,,	2½ ,,	2½ ,,	2½ ,,	No	No	No
4½ ,,	1½ ,,	3 ,,	1 ,,	No	No	No
4 ,,	2 ,,	2 ,,	2 ,,	No	Paediatric dept.	No
4 ,,	1 ,,	3 ,,	1 ,,	No ,,	No	Yes
4 ,,	1 ,,	3 ,,	3 ,,	3 ,,	3 months	No
4 ,,	1 ,,	3 ,,	1 ,,	1 ,,	1 ,,	No
4 ,,	1 ,,	3 ,,	3 ,,	3 ,,	3 ,,	No
3 ,,	—	— ,,	3 ,,	No	No	Yes
3 ,,	1½ ,,	1½ ,,	3 ,,	3 ,,	Later date	No
3 ,,	1½ ,,	1½ ,,	1½ ,,	1½ ,,	1½ months	Yes
3 ,,	1 ,,	2 ,,	3 ,,	No	2 ,,	No
3 ,,	1 ,,	2 ,,	3 ,,	No	No	No
3 ,,	1 ,,	2 ,,	1 ,,	No	No	No
3 ,,	1 ,,	2 ,,	1 ,,	No	Child Hospital	No
3 ,,	1 ,,	1 ,,	3 ,,	No	No	No
3 ,,	—	— ,,	3 ,,	No	No	Yes
3 ,,	—	— ,,	3 ,,	No	No	No
—	— ,,	— ,,	3 ,,	No	No	No

In a few of the hospitals in which it is stated that each student is not allowed to apply the obstetric forceps under supervision, there is appended the remark—rarely or occasionally.

Residence in Hospital or Hostel during Midwifery Training, 1928.

12 weeks	...	2 Teaching Centres
8 ,,	...	1 ,, ,,
6 ,,	...	1 ,, ,,
4 ,,	...	13 ,, ,,
2 ,,	...	4 ,, ,,
3 ,,	...	1 ,, ,,
1 ,,	...	1 ,, ,,
Not stated	...	6 ,, ,,

TABLE II.

Number of Maternity beds in Teaching Centres.

LONDON.

Charing Cross Hospital ...	20	St. Mary's Hospital	10
Guy's Hospital	21	St. Thomas's Hospital ...	22
King's Hospital	24	University Obstetric Hosp.	30
London Hospital	22	Westminster Hospital ...	14
Middlesex Hospital	10	City of London Maternity	71
Royal Free Hospital ...	47	Queen Charlotte's Maternity	75
St. Bartholomew's Hospital	27	General Lying-in Hospital	45
St. George's Hospital ...	11		

PROVINCES.

Birmingham Maternity Hospital ...	65
Birmingham Queen's Hospital	12
Bristol Royal Infirmary	29
Leeds Maternity Hospital	75
Liverpool Maternity	74
Manchester, St. Mary's	90
Newcastle-on-Tyne, Princess Mary ...	80
Sheffield, Jessop Hospital	

WALES.

Cardiff Maternity	23

SCOTLAND.

Aberdeen, St. Andrew's Maternity ...	35
Edinburgh, Royal Simpson Maternity	91
Glasgow Royal Maternity	174

NORTHERN IRELAND.

Belfast Maternity	29

IRISH FREE STATE.

Dublin, Coombe Hospital	40
Cork, Rotunda Hospital	90
Cork, Maternity Hospital	24

TABLE III.

Statistics of the Medical Schools in England, Wales, Scotland, Northern Ireland and Irish Free State, 1928.

Number of Patients.	Number of Students.	Number of Cases Students had.	Number of Pupil Midwives.	Number of Cases Pupil Midwives had.
6114	141	740	163	4219
5379	300	3779	80	1600
4207	122	2684	36	1080
3383	23	286	73	1460
3347	34	415	48	960
3112	8	268	57	2612
2488	27	660	50	1404
2283	56	561	108	1506
2062	46	473	51	1333
1780	46	1237	12	301
1776	59	1191	27	450
1300	70	900	18	360
1292	18	180	35	700
1259	48	1043	0	0
1199	44	605	15	340
1175	16	352	20	658
1154	17	207	24	880
1153	99	1153	0	0
1781	51	971	26	773
2216	48	161	23	1353
1167	16	408	11	446
727	30	618	6	90
661	13	125	22	440
433	22	430	0	0
413	10	82	16	331
366	17	313	0	0
278	19	199	2	57
234	28	218	0	0
163	11	129	0	0
52902	1439	20388	923	23353

The numbers do not balance, because there were more patients than the students and midwives confined.

TABLE IV.

Number of Labours Attended by Students in England, Wales, Scotland, Northern Ireland and Irish Free State.

	Number of In-patients.	Number of Out-patients.	In-patients available for Students.	Out-patients available for Students.	Percentage deliveries by Students of total number of women.	Percentage deliveries by Students of patients delivered in Hospital.	Percentage deliveries of patients delivered in the district.
1.	1492	1620	51	217	33.5	6.4	27.1
2.	776	1004	487	750	26.9	10.6	16.3
3.	1663	825	398	262	24.4	14.7	9.7
4.	489	678	50	358	25.5	3.1	23.4
5.	916	259	303	49	22.0	19.0	3.0
6.	795	464	588	455	21.7	12.2	9.5
7.	679	48	570	48	20.6	19.0	1.6
8.	395	1381	230	961	20.2	3.9	16.3
9.	92	341	89	341	19.5	4.0	15.5
10	1068	773	330	641	19.1	6.5	12.6
11.	322	44	269	44	18.4	15.8	2.6
12.	754	445	395	216	13.7	8.9	4.8
13.	600	700	400	500	12.8	5.7	7.1
14.	2462	2917	2062	1717	12.6	6.9	5.7
15.	1896	1487	234	52	12.4	10.1	2.3
16.	665	489	127	80	12.2	7.5	4.7
17.	2097	1250	415	—	12.2	—	—
18.	1272	2492	244	2440	12.0	2.0	10.0
19.	157	6	123	6	11.7	11.1	0.6
20.	348	805	348	805	11.6	3.5	8.1
21.	249	29	170	29	10.5	9.0	1.5
22.	1384	678	231	242	10.3	5.0	5.3
23.	706	586	180	—	10.0	10.0	—
24.	1889	403	396	165	10.0	7.8	3.2
25.	661	—	65	60	9.6	5.0	4.6
26.	303	110	44	38	8.2	4.4	3.8
27.	2712	3402	—	740	5.2	—	5.2
28.	1029	1087	112	49	3.4	2.4	1.0
29.	229	5	0	218	7.3	0	7.3

TABLE V.

LONDON MATERNITY HOSPITALS, 1928.

Name of Hospital.	Number of in-patients.	Number of out-patients.	Number of pupil midwives.	Number of medical students.	Cases given to students.	Pupil midwives intending to practise.	Prenatal department.	Postnatal department.	Infant welfare department.
Queen Charlottes Maternity	2375	1639	94	74	460	Less than 50 per cent	Yes	Yes	Yes
City of London Maternity	1518	210	42	35	198	50 per cent	Yes	Yes	Yes
General Lying-in Hospital ...	1043	1336	60	—	—	33·3 per cent	Yes	Yes	Yes
Plaistow Maternity	782	3371	167	—	—	Nearly all	Yes	Yes	Yes
Clapham Maternity	798	458	?	—	—	?	Yes	Yes	Yes
	6516	7014	363	109	658				

TABLE VI.

LONDON POOR LAW HOSPITALS, 1928.

Name of hospital.	Number of patients.	Number of pupil midwives.	Number of pupil midwives going to practice.	Prenatal.	Postnatal.	Infant welfare.
North Middlesex	1002	18	?	Yes	Yes	No
St. Giles, Camberwell	635	20	Majority	Yes	No	No
Bermondsey & Rotherhithe	587	18	?	Yes	No	No
St. Andrews, Bow	500	16	?	Yes	No	No
Lambeth	465	18	Very small	Yes	No	No
Lewisham	460	8	1 in 10	Yes	No	No
St. Pancras	425	10	?	Yes	No	No
Greenwich and Deptford	413	7	?	Yes	No	No
St. James	406	20	3	Yes	No	No
Forest Gate Sick Home	350	12	4 per cent	No	No	No
St. Mary Abbots, Kingston	424	7	1 in 20	Yes	Yes	No
Mile End	,369	8	?	Yes	Yes	No
Hackney	333	15	Very small	Yes	No	No
Fulham	313	6	?	Yes	No	No
St. Leonards, N.	312	4	Uncertain	No	No	No
Park Royal	300	8	25 per cent	No	No	No
Paddington	291	8	Very small	Yes	No	No
St. Georges in the East	290	10	Very small	Yes	Yes	No
Hammersmith, W.12.	260	6	?	Yes	No	No
St. Stephens, S.W.	250	6	None	Yes	No	No
Bethnal Green	223	8	None	Yes	No	No
Hampstead New End	172	10	?	Yes	No	No
St. Peters, Whitechapel	119	5	?	Yes	Yes	No
	8899	248				

There were, therefore, 3906 cases more than the pupil midwives required.

TABLE VII

FULL MEDICAL CURRICULUM IN YEARS.

AUSTRALIA.
Adelaide 6; Melbourne $5\frac{1}{2}$; Sydney 6.

AUSTRIA.
Graz 6; Innsbruk $5\frac{1}{2}$.

BELGIUM.
Gand 7; Liége 7; Louvain 6.

BULGARIA.
Sophia 6.

CANADA.
Toronto 6.
Winnipeg 5.

CZECHOSLAVAKIA.
Prague 5.

DENMARK.
Copenhagen 7.

EGYPT.
Cairo 5.

FINLAND.
Helsingfors 8.

FRANCE.
Lille 6; Montpellier 6; Paris 5.

GERMANY.
Bonn 6; Cologne 6; Erlangen $6\frac{1}{2}$; Frankfurt $6\frac{1}{2}$; Freiburg $6\frac{1}{2}$; Giessen $5\frac{1}{2}$; Greifswald 6; Halle 6; Hamburg 6; Heidelburg $6\frac{1}{2}$; Jena 6; Koenigsburg 7; Leipzig $5\frac{1}{2}$; Marburg $6\frac{1}{2}$;

GERMANY *continued*.
Muenster 7; Munich $6\frac{1}{2}$; Warzburg $6\frac{1}{2}$.

HOLLAND.
Amsterdam 7; Groningen 6; Leyden 7.

HUNGARY.
Budapest 6; Debrecen 6; Pecs 6.

INDIA.
Bombay 5; Calcutta $5\frac{1}{2}$; Madras $5\frac{1}{2}$.

ITALY.
Bari 6; Milan 6; Palermo 6; Rome 6; Siena 6.

MEXICO.
Mexico City 6.

NORWAY.
Oslo 7.

ROUMANIA.
Cluj

SOUTH AFRICA.
Johannesburg 6.

SWEDEN.
Lund 9.

TURKEY.
Stamboul 6.

SWITZERLAND.
Basle $5\frac{1}{2}$; Berne $5\frac{1}{2}$; Zurich 6.

UNITED STATES.
Universities and Medical Schools 4.

TABLE VIII.

	Practical Study in Midwifery and Diseases of Women, other than the systematic Lectures.	Residence in Hospital.	Regulation number of Cases.	Average number of Cases.	Do Students apply the Forceps.	Prenatal Clinic.	Compulsory for Students.	Postnatal Clinic.	Compulsory for Students.	Infant Welfare Clinic.	Compulsory for Students.
AUSTRALIA											
Adelaide	4 months	—	20	20	No	Yes	Yes	Yes	Yes	Yes	Yes
Melbourne	1 ,,	4 weeks	20	20	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sydney	4 ,,	—	8	8	No	Yes	Yes	No	No	Yes	Yes
AUSTRIA.											
Graz	12 ,,	20 days	2	4	?	Yes	No	No	No	No	No
Innsbruk	18 ,,	3 weeks	0	18	No	Yes	Yes	No	No	+	No
BELGIUM.											
Gand	24 ,,	For cases	6	11	No	Yes	No	No	No	Yes	No
Liége	24 ,,	4 weeks	0	0	No	Yes	Yes	Yes	Yes	Yes	No
Louvain	24 ,,	For cases	2	3	No	Yes	Yes	No	No	+	Yes
BULGARIA.											
Sophia		0	0	15	No	—	—	—	—	—	—
CANADA.											
Toronto	24 ,,	4 days	20	20	No	Yes	Yes	Yes	Yes	No	No
Winnipeg	0 ,,	0	0	*	No	Yes	Yes	No	No	No	No
CZECHOSLOVAKIA.											
Prague	12 ,,	6 weeks	0	1	No	Yes	Yes	No	No	+	Yes
DENMARK.											
Copenhagen	18 ,,	4 weeks	0	25	Yes	Yes	Yes	No	No	+	No
EGYPT.											
Cairo	3 ,,	0	0	3	No	Yes	Yes	Yes	Yes	Yes	Yes
FINLAND.											
Helsingfors	5 ,,	4 weeks	0	8	75	Yes	N.O.	No	No	+	No
FRANCE.											
Lille	8 ,,	12 weeks night	0	11	No	Yes	N.O.	Yes	No	Yes	No
Montpelier	5 ,,	0	3	4	No	Yes	Yes	Yes	Yes	Yes	Yes
Paris	4 ,,	?	6	8	No	Yes	Yes	Yes	Yes	Yes	Yes
GERMANY.											
Bonn	—	2 weeks	4	?	No	Yes	Yes	No	No	No	No
Cologne	12 ,,	8 days	4	4	?	Yes	Yes	No	No	No	No
Erlangen	10 ,,	10 ,,	4	8	Yes	No	No	No	No	No	No
Frankfurt	24 ,,	N.O.	4	15	No	Yes	Yes	+	No	No	No
Freiburg	18 ,,	For cases	4	4	Yes	+	No	+	No	+	No
Giessen	12 ,,	7 days	4	7	Yes	?	?	?	?	?	?
Greiswald		N.O.	4	?	Yes	No	No	No	No	No	No
Halle		0	4	4	Yes	No	No	No	No	No	No
Hamburg	12 ,,	3 days	4	6	Yes	Yes	Yes	No	No	+	No
Heidelberg	18 ,,	0	4	4	No	+	No	+		+	No
Jena	—	0	4	4	No	Yes	No	No	No	No	No
Koenigsburg	18 ,,	4 weeks	4	15	No	Yes	Yes	Yes	Yes	No	No
Leipzig		For cases	4	16	Yes	No	No	No	No	No	No
Marburg	18 ,,	Few days	4	5	?	No	No	No	No	+	No
Muenster	12 ,,	N.O.	4	12	Yes	Yes	Yes	No	No		

TABLE VIII (*Continued*).

	Practical study in Midwifery and Diseases of Women, other than the systematic Lectures.	Residence in Hospital.	Regulation number of Cases.	Average number of Cases.	Do Students apply the Forceps.	Prenatal Clinic.	Compulsory for Students.	Postnatal Clinic.	Compulsory for Students.	Infant Welfare Clinic.	Compulsory for Students.
Munich	12 months	0	4	4	Yes	No	No	Yes	No	No	No
Wurzburg		N.O.	5		Yes	?	N.O.	?	N.O.	?	N.O.
HOLLAND.											
Amsterdam	12 ,,	8 weeks	22	32	Yes	Yes	Yes	No	No	+	Yes
Groningen	2 ,,	For cases	12	45	No	Yes	Yes	Yes	Yes	Yes	Yes
Leiden	3 ,,	6 days	10	25	Yes	No	No	No	No	No	No
HUNGARY.											
Budapest	12 ,,	4 weeks	2	3	No	Yes	Yes	Yes	Yes	No	No
Debrecen	12 ,,	0	2	3	No	Yes	Yes	No	No	+	No
Pecs	14 ,,	6 days	2	2	Yes	Yes	Yes	No	No	No	No
INDIA.											
Bombay	3 ,,	0	20	20	No	Yes	N.O.	No	No	No	No
Calcutta	6 ,,	0	0	3	No	Yes	Yes	Yes	Yes	Yes	Yes
Madras	6 ,,	0	20	20	No	Yes	Yes	Yes	Yes	No	No
ITALY.											
Bari	6 ,,	2 weeks	0	0	No	Yes	Yes	No	No	Yes	Yes
Milan	12 ,,	8 days	0	0	No	Yes	N.O.	Yes	N.O.	+	N.O.
Palmermo	12 ,,	2 weeks	4	16	No	No	No	No	No	No	No
Rome	12 ,,	4 weeks night	0	10	No	Yes	Yes	Yes	Yes	No	No
Siena	8 ,,	2 weeks	0	—	No	Yes	N.O.	Yes	N.O.	No	No
MEXICO.											
Mexico City	12 ,,	0	?	—	No	No	No	No	No	No	No
NORWAY.											
Oslo	6 ,,	9 days	0	8	No	Yes	Yes	No	No	Yes	N.O.
ROUMANIA.											
Cluj	12 ,,	N.O.	0	3	No	Yes	Yes	Yes	Yes	Yes	Yes
SOUTH AFRICA.											
Joh'nesburg	14 ,,	6 weeks	0	10	No	Yes	Yes	Yes	Yes	Yes	Yes
SWEDEN.											
Lund		16 weeks	0	45	Yes	Yes	Yes	Yes	Yes	No	?
SWITZERLAND.											
Basle	12 ,,	10 days	10	23	No	No	No	No	No	+	N.O.
Berne	18 ,,	2 weeks		3	Yes	Yes	Yes	Yes	Yes	No	N.O.
Zurich	12 ,,	3 days	15	17	No	Yes	Yes	No	No	No	No
TURKEY.											
Stamboul	—	2 days	0	4	No	Yes	Yes	No	No	No	No

TABLE VIII (*Continued*).

	Practical study in Midwifery and Diseases of Women other than the systematic Lectures.	Residence in Hospital.	Regulation Number of Cases.	Average Number of Cases.	Do Students apply the Forceps.	Prenatal Clinic.	Compulsory for Students.	Postnatal Clinic.	Compulsory for Students.	Infant Welfare Clinic.	Compulsory for Students.
UNITED STATES OF AMERICA UNIVERSITIES AND COLLEGES.											
Bellevue	230 hours	2 weeks	6	6	No	Yes	Yes	Yes	Yes	Yes	Yes
Columbia	7½ weeks	3 weeks	6	6	No	Yes	Yes	Yes	Yes	Yes	Yes
Pennsylvania											
Cornell	210 hours	2 weeks	12	16	No	Yes	Yes	Yes	Yes	Yes	Yes
Jefferson Medical College	250 weeks	3 weeks	12	12	No	Yes	Yes	Yes	N.O.	Yes	N.O.
Johns Hopkins	5 months	1 week	No	8	No	Yes	Yes	Yes	Yes	Yes	No*
Long Island College	—	8 weeks	12	12	No	Yes	Yes	Yes	Yes	Yes	Yes
Womens Medical College	567 hours	6 days	6	6	No	Yes	Yes	Yes	Yes	Yes	Yes
Washington	5½ weeks	0	12	12	No	Yes	Yes	Yes	Yes	Yes	Yes

\+ = Infants seen at Childrens' Hospital and University Polyclinic or Town Bureau.
N.O. = Not obligatory.
? = Answer not clear. * Yes for selected pupils in the fourth year.

CHINA.

Midwifery and Gynæcological teaching still in an embryo state. There are no government regulations as to the standard of midwifery teaching needed. The approval by the Board of Education is a formal affair.

PEKIN UNION MEDICAL COLLEGE.

The only school giving a reasonably adequate training. In this school there is one term of ward rounds for 4 months in the third year. Also special instruction in labour for eight cases, two students to a case. in the fourth year each student has one month in the obstetric and gynæcological wards, during which time he delivers, under supervision 7 to 15 cases. Also daily attendance in the prenatal clinic. In addition full courses of lectures and clinical instruction.

University of Hong Kong gives a similar instruction, but comparatively few of graduates settle in China. The Missionary Colleges, The

Margaret Williamson in Shanghai and the Hackett Medical College in Canton are for women, and in these clinical material in midwifery is sufficient but there is much room for improvement of teaching. Other missionary colleges Isiman in Moukden, Chengtu and Hankow are hampered by lack of clinical material. Government Colleges grant degrees, but the teaching and clinical work is most inadequate. In some it is entirely theoretical, many of the graduates have never had any practical training in midwifery and gynæcology. The Kiangsu Provincial School is an exception. There has been no training of any sort for midwives who have to register with the Police only. In Peking and Canton efforts are being made to remedy this state of affairs, especially in Peking where the head of the School is an able Chinese woman doctor assisted by a fully trained Chinese nurse with the C.M.B.

With respect to the application of the obstetric forceps it appears to be certain, in some cases in which the answer is "Yes," that it refers to the application on the phantom, there being so few cases to each student.

With respect to the period indicated under "Practical Study" in some cases this is difficult to estimate. The intention has been to limit it to hospital attendance and ward work, the systematic lectures in many foreign clinics apparently being given for two years.

SUMMARY

Medical Students.	Number of Students.	Patients confined.	Should have confined.	Deficit.	Average per student.
London					
Medical Schools	488	8054	9760	1706	16.5
Maternity Hospitals	109	658	2180	1522	6.0
Provinces and Wales					
Medical Schools and Maternity Hospitals.	207	3189	4140	951	15.4
Scotland					
Medical Schools and Maternity Hospitals.	262	1669	5240	3571	6.3
Northern Ireland and Irish Free State					
Medical Schools and Maternity Hospitals.	482	7476	9460	1984	15.4
	1548	21046	30780	9734	11.9

Pupil Midwives.	Number of pupils.	Number confined.	20 cases each.	Excess.	Average per pupil.
London					
Medical Schools	107	2302	2140	222	22.0
Maternity Hospitals	303	11010	7200	4350	32.5
Poor Low Hospitals	248	8809	9900	3039	35.8
Provinces and Wales					
Medical Schools and Maternity Hospitals.	356	9507	7120	2447	20.8
Scotland					
Medical Schools and Maternity Hospitals.	318	7958	6300	1508	25.0
Northern Ireland and Irish Free State					
Medical Schools and Maternity Hospitals.	142	3400	2840	626	24.4
	1534	43868	30080	13188	27.7

The percentages indicated opposite the entry Maternity hospitals are not quite accurate, since the figures received included the total number of patients confined, the vast majority certainly by pupil midwives but a few not.

Diagnosis and Treatment of Disproportion

By Gibbon Fitzgibbon, M.D., F.R.C.P.I.
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The treatment of disproportion appears to be still in a nebulous state. All the components for effective treatment are in existence and very perfect, but they are wanting in co-ordination and are often in opposition. This was rather borne out at the recent Congress when disproportion was the main subject for discussion. The merits and demerits of induction of labour and Cæsarean section and their relative advantages and disadvantages were propounded and supported, but there was little definition of how to select cases for treatment by either. Professor Young found fault with the present supervision of obstetric cases, owing to want of continuity in responsibility, but even given that continuity there was nothing to reduce the present want of system in treatment, which at present seems to be guided only by an individual predilection for induction, Cæsarean section, or to chance the patient delivering herself at term. This last method of procedure is what has prevailed in the past, and led to the adverse criticism of obstetric practice, and the extensive adoption of Cæsarean section and induction of premature labour to try to avoid the unfortunate results of labour at term, but these operative measures do not appear to have produced the desired results.

Professor Shaw stated that at St. Mary's, Manchester, although the number of Cæsarean sections had enormously increased, the number of craniotomies was not reduced. This same phenomenon may be noted at other centres, whether induction or Cæsarean section is the favoured treatment.

Antenatal supervision has been markedly increased everywhere in recent years, and it has unquestionably shown a beneficial influence upon the complications of pregnancy, but it has lamentably failed in controlling the accidents and complications of labour, although it has brought into the reach of early operative treatment many of the women who show signs or give a history indicating that they may have difficulty at the time of confinement, and these women have been treated so as to avoid the expected difficulties. This must suggest that our present methods of diagnosis are at fault.

At present the number of women treated by induction of labour and Cæsarean section is greater than the number of women who suffered from dystocia before the perfection and universal adoption of these methods of treatment, but the number of craniotomies, difficult deliveries, and disastrous results of delivery with the forceps is not diminished. This suggests that the application of operative interference for the purpose of avoiding dystocia is not wholly confined to cases calling for such treatment, while it is undoubtedly not applied to many cases in which it would be of benefit.

When I took charge of the Rotunda Hospital in 1919, I endeavoured to base my treatment of women with contracted pelves, or a history of dystocia, on the accepted standards and facts, but in a very short time I found the results were far from satisfactory. Cases thought to require interference proved not to require it, while others considered satisfactory, from antenatal investigation, developed serious dystocia. The characters upon which an antenatal estimate could be based were the dimensions of the pelvis, and the application of the presenting part to the brim; cases could be selected and tolerably well grouped, but the treatment indicated, according to the then accepted rules, frequently proved wrong. The lack of conformity in the size of the fœtus was constantly upsetting the grouping of cases, as shown by the after results, and women whose pelvic dimensions definitely indicated induction of labour three or four weeks before term delivered themselves easily at term, while others who should have delivered themselves ended with Cæsarean section. The size of the fœtus was, and still is, a factor which cannot be sufficiently estimated with accuracy in a primigravida; therefore, a definite method of delivery selected during pregnancy, must be liable to be erroneous.

During the first two years of my Mastership, I studied these cases very closely, paying particular attention to the after results of delivery, and the progress of labour. In my text-book, "Practical Obstetrics,"[1] published in 1923, I advocated what I called "A Trial of Labour," and laid down principles upon which the progress of labour was to be estimated. I demonstrated by the record of a short series of cases the utter impossibility of prognosticating the outcome of labour, when the natural forces were allowed to act and were not interfered with, and I maintained that the only accurate method of estimating the possibility of a given woman to deliver herself was by allowing her to try to do so. In the following year, 1924, in three lectures, delivered in the University of London[2] I gave a more extensive account of my practice based on a further year's study of the condition. The Lectures were entitled "Contracted Pelvis," but at the outset I pointed out that difficulty in delivery

depended, when all other conditions were normal, on two factors, viz., the size of the pelvis, and the size of the fœtus. When these are incompatible there is disproportion, and dystocia results. The disproportion may be the result of fault in the size of the pelvis, or the size of the child; we can estimate the former fairly accurately during pregnancy, or even in the non-pregnant, but we cannot accurately estimate the latter, and we cannot foretell the effects of the natural process of labour in overcoming what appear to be marked degrees of disproportion. During the subsequent years of my Mastership, which ended in 1926, I followed the principles propounded in my lectures, and I recorded the results in my annual reports of the Rotunda Hospital. On the whole, I was eminently satisfied with the results: I believe I avoided performing Cæsarean sections or inducing labour unnecessarily, and I did not increase dystocia. I made some mistakes in my estimations; mistakes were sometimes made in diagnosis, and not always corrected soon enough to avoid untoward results. These cases gave ground for criticism of the conduction of the methods adopted, but they were faults in the conduction of a trial labour, and not faults in the principle. When I left the Rotunda Hospital I handed on to my successor a junior staff fully grounded in the principles and the clinical practice of my methods, and I find the present Master, Dr. Solomons, after two years' experience, has adopted, and at the recent Congress, advocated a trial of labour as the only efficient method of applying the proper treatment to the individual case. He emphasized the importance of, and the necessity for, observing the clinical phenomena which I laid down as the basis upon which a trial of labour can be made with safety, so that when natural delivery will not result, the appropriate treatment can be adopted without the benefit of that treatment being diminished.

At present there are three methods by which pregnancy, in a given woman, can be terminated without injury to the mother or child. (1) Natural spontaneous labour, which is the ideal. (2) Delivery through the natural passages, by the natural efforts, but after the induction of labour at such a time before term as will give a fœtus of a size compatible with the maternal passages, and, at the same time, a child with a good prospect of survival. (3) Cæsarean section, which method should only be adopted when neither of the other methods obtain.

These three methods should be collateral to each other and not in opposition or competition. Their selection, in my opinion, should be in the order of preference given above, and they should be applicable to every case of pregnancy, whether a primigravida or a multipara. The method of delivery to be adopted in any

individual case, should be that one best adapted to the physical condition of the individual woman, and not in accordance merely with the personal preference of the obstetrician.

Antenatal investigation enables the patients to be sorted into two main groups. (1) Those who will inevitably be able to deliver themselves spontaneously at term. (2) Those in whom difficulty may be anticipated. The former constitute the vast majority of obstetric cases, and can be left to nature, aided by midwives, or general practitioners with no special training. But the latter group is the one which calls for a revision of the present methods of diagnosis and prognosis and a special obstetric training of those taking charge of these cases in labour. This latter group is composed of both primigravidæ and multiparæ. To one of these in particular, the unknown quantity of the size of the fœtus applies, but for both in the interests of good obstetrics it is essential that the proper method of treatment should be adopted so that, (*a*) those who can deliver themselves by the natural processes at term may be allowed to do so; (*b*) those who can deliver themselves of an infant with a good prospect of survival, although a few weeks before term, may be made to do so; (*c*) those who will suffer damage, or whose infants will incur disabilities by delivery through the natural passages, will be delivered by an alternative route, i.e., Cæsarean section.

In order to obtain this desirable state of obstetrics, our methods require to be adapted to modern conditions. Numerous beliefs, accepted from past observations, require to be revised in the light of present-day knowledge and improved methods. It is utterly futile to attempt to define the proper treatment of any individual obstetric case, or group of cases, by the consideration of the statistical results of any individual method of treatment. All that can be obtained from a consideration of the results of induction of labour, or of Cæsarean section, and their modifications, is the establishment of the justification, or otherwise, of these operations, and the superiority of the respective techniques of each. No one, not even the most ardent advocate for one, is going to condemn the other mode of treatment; both have been placed in recent years in the forefront of justifiable and perfected surgical procedures, and, therefore, all that remains is to apply each of them to their proper cases, not as alternatives, depending upon the spin of the coin for their selection, but according to what will give the desired results in each individual case.

My object in this paper is to lay before the profession, and particularly before the obstetric schools, the conclusions to which I found myself forced as a result of seven years' close observation in the Rotunda Hospital. I want to point out various accepted

dicta based on observations in the past, which I do not consider compatible with fact, the maintenance or retention of which in the teaching of obstetrics is a cause of much of the present-day failure to improve obstetrics, and I want to indicate the lines upon which I consider the proper method of treatment can be applied to each individual case. I do not expect the statements, and practice, which I make and advocate to be accepted as *ex cathedra*, but I suggest that the points be further investigated by the men who are at present engaged in the active conduction and supervision of obstetric clinics, and who have the skill and knowledge to investigate personally the points, and to prove, or disprove, them by actual observation. It is not sufficient to collect and analyse the observations made by even senior students and recorded upon case sheets. The observations require to be made by men who are thoroughly competent to make them accurately, and who are in close contact with the cases, so that they can check their observations by the subsequent developments. It is in this way that I made the observations myself, and came to the conclusions that I now accept.

Disproportion. It is fully recognized that disproportion is not properly a malformation or a disease. It is merely the association of a given fœtus with a pelvis which is too small for its passage. Very few of the cases arise from the deformed pelves, upon which so much space is expended in text-books. On the whole, little more than one per cent of the cases of disproportion that come under treatment are due to pelvic distortion, and even with a careful scrutiny, only about 15 per cent to 20 per cent of the patients will present even mild indications of a rachitic diathesis. The remainder, at least eighty per cent of the patients, must be looked upon as perfectly normal, healthy women. The condition of disproportion is only an accident associated with the particular confinement.

I think there is no doubt that disproportion has increased in the past two generations among civilized people. I believe this is due to the increased facility of transportation, and the very marked mixing of different groups of people in the community who formerly remained to a very marked degree isolated, at any rate, in so far as intermarriage was concerned. As a result of this intermingling, women who are perfectly normal in their own type, but a small type, may give birth to infants which belong to a larger type, and so disproportion results. It does not necessarily follow that a woman who is married to a large man will have a large fœtus, it is probably in the first generation only an even chance, but a woman, born of such a combination may be small, or even only slightly under the average, and when married to an average man, may produce an

oversized fœtus. In the same way an average-sized man may transmit from his ancestors the character of over-size in the fœtus. The following case illustrates this: A woman about five feet two inches in height and of light build consulted me after having had a very difficult confinement at term, the infant weighing nearly ten pounds. Her husband was a light-built man about five feet ten inches in height, but the name was familiar to me. I asked if he was one of the X's. "Oh, yes," said the lady, "but he is a freak in the family."—The family all ran to six feet four inches, or more, in height, and were built in proportion. This particular specimen was the only child of his mother, who happened to be a very small type, while all his name relations were of the very large type. This patient's second pregnancy was terminated twenty days before term, and the infant was seven pounds in weight.

The Pelvis. For practical purposes it is necessary to take some standard as normal for the pelvis, and, on the whole, that usually accepted is satisfactory, viz., external conjugate 20 cm. (eight inches); intercristal 29 cm. ($11\frac{1}{2}$ inches); interspinous 26 cm. ($10\frac{1}{2}$ inches). These external measurements are fairly accurately associated with measurements of the pelvic brim of 10 cm. (four inches) in the conjugata vera and 12.5 cm. (five inches) in the transverse. A pelvis with such measurements is always compatible with the passage of an average fœtus, and is even capable of letting a fœtus very considerably larger than the average pass with ease. It is when the dimensions of the pelvis drop below these averages that trouble may arise, and it should be contemplated, when the measurements are below an external conjugate of 18.5 cm. ($7\frac{1}{2}$ inches), an intercristal of 26 cm. ($10\frac{1}{2}$ inches), and an interspinous of 23 cm. ($9\frac{1}{2}$ inches). Pelves of these dimensions are compatible with an average fœtus, but they may prove to be incompatible with a fœtus above the average. As the external dimensions of the pelvis sink below these measurements, the probability of disproportion progressively increases; they gradually come to be only just compatible with an average sized fœtus, and when further reduced are only compatible with a fœtus which is under the average. Nevertheless, a number of such pelves are normally only associated with average or undersized fœtuses and, therefore, these women never develop disproportion.

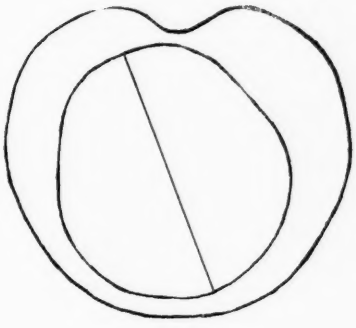
The Fœtus. In the same way as for the pelvis, an average size for the fœtus must be accepted, and this is generally taken as from seven to seven and a quarter pounds, but the whole group of infants taken to form the average vary from six pounds to over nine pounds. The majority will fairly closely approximate to the average, *vide* reports of Cæsarean sections at St. Mary's Manchester,[3] where only

five per cent were nine pounds, or over, in weight, 22 per cent eight pounds, or over, and 26 per cent over seven and a half pounds. In only six instances in the same series was the external conjugate of the pelvis eight inches, or more. The average size of a fœtus is associated with an average fœtal head in which the suboccipito-bregmatic and bi-parietal diameters are each 9.5 cm. ($3\frac{3}{4}$ inches). It is when the fœtus exceeds nine pounds in weight that disproportion may be anticipated with a pelvis of average proportions, but when the fœtus at all exceeds the average, disproportion must be contemplated if the pelvis is reduced in size, even to the upper limits of contraction only.

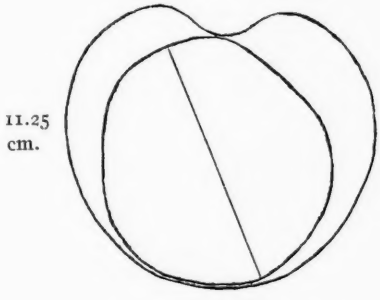
Relation of Pelvis to Fœtal Head. The external measurements of the pelvis are not accurate criteria of the internal dimensions, but they are easily obtained, and patients will submit to this examination, whereas, taking the internal measurements is a serious operation, and cannot be applied as a routine antenatal investigation. Nevertheless, it may be fairly generally accepted that in the normal pelvis the measurements given above represent a transverse measurement at the brim of not less than 12.5 cm. (five inches), and a conjugata vera of at least 10 cm. (four inches). This sized brim, when associated with the average normal-sized fœtal head presenting as a vertex, leaves at least 0.5 cm. ($\frac{1}{4}$ inch) free space in the conjugate, and three cm. ($1\frac{1}{4}$ inches) in the transverse). At the upper limits of contraction, the average fœtus is still compatible in the conjugate, and there is still considerable free space laterally.

Types of Contracted Pelves. It is important to consider the relations of the diameters of the pelvis to each other. In all cases of contraction it is the conjugate that is at first reduced to a dimension of bare compatibility with the fœtal head. This is illustrated in Fig. 1. The first figure shows the free space around the normal fœtal head in the average pelvis; the next figure shows the same fœtal head in a pelvis reduced to the upper limits of contraction; it is still compatible, but there are areas of contact. The third figure shows the fœtal head in a very common type of contracted pelvis the transversely contracted, or round pelvis, with the transverse diameter reduced more in proportion than the conjugate, and the areas of contact increased while the mobility of the head is considerably restricted. The fourth figure shows a head in a pelvis markedly contracted in the conjugate, but normal in the transverse; the simple flat pelvis; mobility is complete, and so actual overlapping can be avoided by adaptation of the head to the available space. The fifth figure shows the head in a pelvis, with a lesser degree of conjugate shortening than in the simple flat pelvis, but with some shortening of the transverse, which results in the overlapping not being capable of complete obliteration.

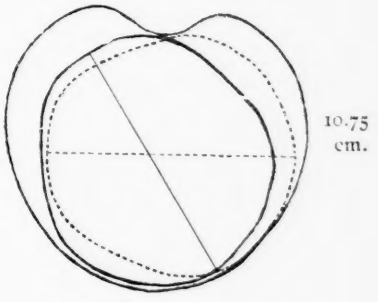
FIG. 1.



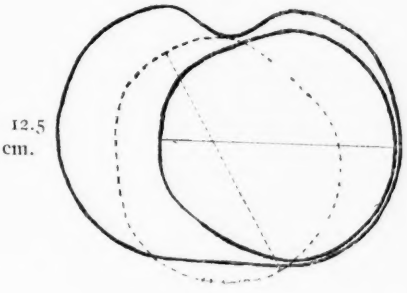
10 cm.
Normal.



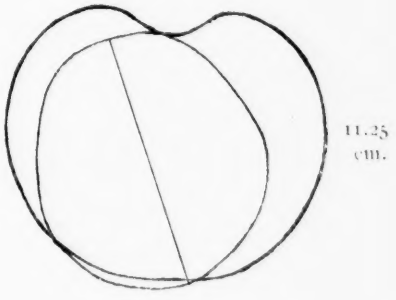
9 cm.
Symmetrically contracted.



9 cm.
Transversely contracted. Round.



8 cm.
Simple, flat.



8.5 cm.
Generally contracted, flat.

Degrees of Contraction. Although treatment cannot be based upon the measurements of the pelvis, there is some advantage in dividing contracted pelves into three groups.

1. Minor Contraction.—The conjugate is reduced below the normal, but not less than 9.25 cm. ($3\frac{3}{4}$ inches), and the transverse not less than 10.75 cm. ($4\frac{1}{4}$ inches). This degree of contraction is compatible with the birth of an average fœtus, irrespective of the size of the transverse diameter. Disproportion only occurs when the fœtus is over-sized.

2. Medium Contraction. The conjugate is reduced below 9.25 cm. ($3\frac{3}{4}$ inches), but not less than 8.25 cm. ($3\frac{1}{4}$ inches). The transverse varies from the normal down to 10.75 cm. ($4\frac{1}{4}$ inches). In this degree the conjugate at the upper limits of the degree of contraction is compatible with an average normal fœtus, and as the conjugate so reduced is only compatible with the normal fœtus provided the transverse is sufficiently roomy to permit the head to move laterally, but even with the minimum conjugate of this degree, a normal fœtus can be born provided there is no reduction of the transverse, as the head is able to move laterally and bring the bi-temporal diameter of $3\frac{1}{5}$ inches into the narrow conjugate. This degree of contraction comprises the majority of cases of disproportion, and disproportion is dependent on the relation between the conjugate and the transverse, as well as upon the size of the fœtus.

3. Major Contraction. The conjugate is reduced to 8 cm. ($3\frac{1}{5}$ inches) or less. In this degree, birth of a normal fœtus is only possible if the transverse is normal. Such a relation between the diameters is rare and, therefore, disproportion practically always occurs unless the fœtus is under the average in size.

Treatment can, to some extent, be based on these degrees of contraction. With a minor degree, the induction of labour will always be successful if performed not later than term, and will not be required if the fœtus weighs less than seven and a quarter pounds.

In the major degree, induction will hardly ever be justified before term, as the fœtus to be born through this size of pelvis without considerable lateral movement cannot be more than five and a half pounds in weight, and birth at this weight does not give a good enough prospect of survival. Delivery may take place at term or before, if the fœtus is small, otherwise Cæsarean section is best.

With the medium degree of contraction, there are so many counter-balancing factors that no treatment can be defined.

Investigation of Cases. The selection of the treatment to be adopted in any individual case does not present an insuperable problem, and the same principles are applicable to all cases, whether

they come into the minor, medium, or major degrees of contraction. It is first a matter of selecting from the whole mass of pregnant women those who are likely to develop dystocia from disproportion, if, and when, they fall into labour at term, and then estimating the relation of the two factors which produce disproportion, 1. The size of the pelvis. 2. The size of the fœtus. Attention should be paid to the size of the pelvis at any time during pregnancy, when the patient presents herself for antenatal supervision. Notice should be taken of a patient who is small of stature, and the external measurements of the pelvis noted. By this means the patient can, more or less, be classed in one of the degrees of pelvic contraction. The physical characters of the patient's family, and of her husband and his family, should also be inquired about. If the patient is a primigravida there is nothing more to be ascertained until after the thirty-second week of pregnancy. In the case of a multipara the character of previous labours, the size of, and result to, the infants are most important, but these facts must be carefully weighed. The statement that a labour was difficult or protracted, does not indicate that there was disproportion, nor does the fact that the infant was born, or delivered, dead. The manner in which the labour was conducted must be estimated. In a multipara the condition of the abdominal walls is of considerable importance. It is quite erroneous to assume that marked relaxation is the outcome of a pregnancy with normal proportions, and when it is present, oversize of the fœtus should be suspected, but it may have been caused by a previous multiple pregnancy, or hydramnios. When there is a history of an over-sized infant having been born, the possibility of prolongation of the pregnancy should be inquired about. The patient should then be told to report at the twenty-fourth and again at the thirty-second weeks of pregnancy, and the height of the fundus noted at these times, whether it is higher in the abdomen than would normally correspond with the period of pregnancy.

The patient should next be seen at the thirty-sixth week of pregnancy. No treatment should be contemplated before this date, but at this time a very good idea of what will be required can be obtained. In normal pregnancy at the end of the thirty-sixth week, the head should be deeply engaged in the pelvic brim, both in primigravidæ and in multiparæ. Some time in pregnancy before the thirty-sixth week the fundus of the uterus has ascended in the abdomen so as to come in contact with the thoracic diaphragm, and as this structure does not give way before the upward pressure of the fundus the rapid growth of the fœtus at this time has to find additional space, and so the head descends more fully into the lower uterine segment, often stretching the internal os.

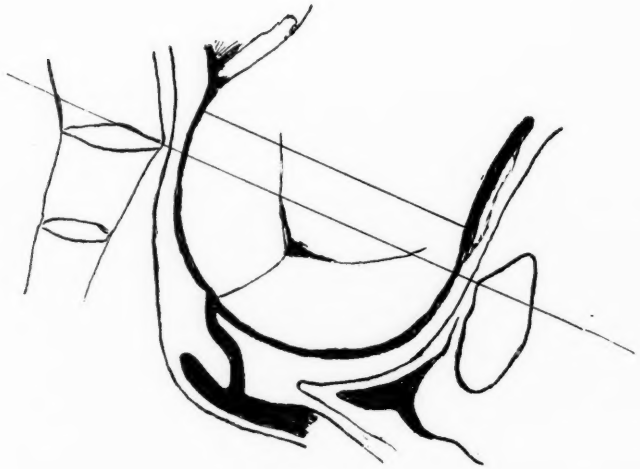


FIG. 2.

Normal proportions. The head with the lower uterine segment engaged in the brim of the pelvis at the 36th week of pregnancy. The bi-parietal and suboccipito-bregmatic diameters lie a very short distance above the true pelvic brim.

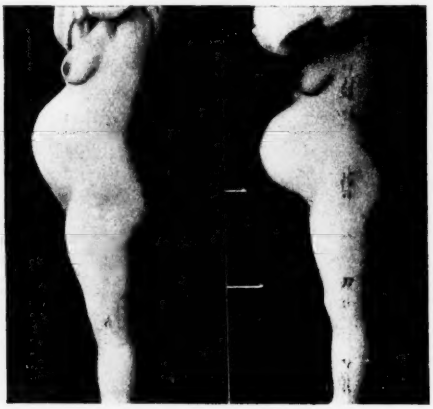


FIG. 3.

Comparison of fundal projection in primigravida at term.
Left: Normal compatible proportions, spontaneous delivery.
Right: Marked disproportion, Cæsarean section.

A very considerable portion of the fœtal head comes to occupy the pelvic cavity, and when palpation of the presenting part is made with Pawlik's grip gives the impression that the fingers and thumb are in contact with the head at points further from the pelvic brim than those occupied by the circumference of the head passing through the bi-parietal eminences. In fact, the sub-occipito-bregmatic and bi-parietal diameters lie a very short distance above the true pelvic brim. (Fig. 2). When the head is not engaged at the thirty-sixth week, it is usually due to one of three causes: 1. An undersized fœtus in proportion to the abdomen, which does not require the pelvic space. 2. A multiparous patient who has already had her abdominal walls abnormally relaxed. 3. A fœtal head which, while surrounded by the uterine tissues, is not able to pass freely into the pelvic brim. These last two cases require further investigation. In the case of the multipara, previous history should be sufficient. In the third case subsequent observation is required. During the next four weeks of pregnancy, the anterior abdominal walls give way, and the fundus of the uterus progressively projects more forward. In the relaxed multipara, it is possible to estimate whether the projection is due to the size of the fœtus or merely due to relaxation. In a primigravida it will always be due to the size of the fœtus, and the abdominal wall will be relatively tense (Fig. 3). This projection of the abdominal wall is the principal sign to be watched up to the date of term, and when at any time after the thirty-sixth week it has reached a degree which normally would correspond to that attained at term, a thorough investigation of the proportions should be made under an anæsthetic as the best time for induction has probably been reached.

The head and pelvis should be tested by the Müller-Kerr method. If the fœtus is presenting as a breech it should be changed to a head presentation by external version, but this might have been done more easily at an earlier examination. I do not propose to describe this method. It is sufficiently well known, and I have dealt with it very fully in my lectures on contracted pelvis.[2] If at this examination the pelvis is of a major degree of contraction the fœtus will be probably still too small to justify induction of labour, and so the case may have to be allowed to continue till a degree of disproportion has developed which precludes induction of labour, and therefore have to go to term for Cæsarean section. The same may apply to some of the cases with a medium degree of contraction in which there is considerable narrowing of the pelvis, with marked shortening of the conjugate, but the majority of the cases with a medium degree of contraction, and all the cases with a minor degree, will be suitable for induction of labour at some date between the thirty-seventh week of pregnancy and term.

In the case of a multipara when a reasonably reliable statement of the size of the previous infant can be obtained, the right date for induction can be fixed from this fact and the evidence obtained from the abdominal projection.

Estimation of Size of Fœtus from Previous Infant. The growth of the fœtus after the thirty-sixth week is sufficiently regular to allow an estimate of the weight to be made at the end of each week of pregnancy from the known weight of a previous infant. Owing to the mixed types of parents in the present population, referred to previously, occasional cases of marked lack of confirmation to type may occur, but, as a rule, an individual woman produces about the same sized infants at different pregnancies, and in the last four weeks of pregnancy an estimate can be made by the following rule:

Take 10 per cent off the weight at a given week of pregnancy to obtain the weight of the fœtus one week earlier; thus,

Weight of infant at term 8 pounds equal to 128 ounces.

,,	,, fœtus	,,	39	weeks	(128 less	12)	116	,,
,,	,,	,,	,,	38	,,	(116 ,, | 11)	105	,,
,,	,,	,,	,,	37	,,	(105 ,, | 10)	95	,,

In practice, I have found this method of estimation most reliable, and mistakes owing to a woman having an unexpectedly small infant can be avoided by the examination prior to induction of labour. In the case of a primigravida there is a greater degree of uncertainty as to the proper time for labour to be induced, and even with the most careful investigation, when labour has been induced or allowed to occur at term, the estimation of the proportions may prove to have been erroneous. If the fœtus is smaller than was expected, it will seldom matter when the induction is performed in the last three weeks of pregnancy and the case is not one of a major degree of contraction, while if the error is such that disproportion does exist, the methods advocated in a trial of labour will prevent any disastrous results.

Induction of Labour. It has sometimes been contended that induction of labour should not be adopted in primigravidæ: such a contention is wholly unjustified, and primigravidæ who are not capable of giving birth to their infants at term, but who could deliver themselves of healthy, strong infants one to three weeks before term, are essentially entitled to be treated by induction, rather than risk a failure of labour at term or being submitted to a Cæsarean section. Induction of labour can be performed in the present day with practically absolute safety, and the untoward results which are held up against the operation are chiefly produced from the statistical records compiled during the past ten to twenty years, when the procedure was undeveloped and its application

frequently erroneous. If induction of labour is judged on its merits during the past five years it is more than justified.

Induction of labour should be practised either before term or at term at such a time as it is thought that the fœtus has reached the limit of size compatible with the maternal pelvis, provided the maternal pelvis is not of such small dimensions as to necessitate the birth of a fœtus of too small development. These cases are actually rare; the vast majority are of proportions compatible with the birth of an infant of at least six pounds in weight.

One of the chief causes of unsuccessful results from the induction of labour is procrastination in its performance. A case is considered to have reached the limits of proportion, but induction is deferred and thought about for a week; or a case has reached term and the proportions seem good, but labour is waited for and does not occur for perhaps one or two weeks. In both cases induction has not been performed at the time of election, and an unsatisfactory result is due to disproportion, which was not avoided by the induction. The various methods of induction may be divided into two groups: (1) the medicinal; (2) instrumental. The efficacy of the medicinal method for stimulating active labour in a patient at term, or on the point of starting labour, has been proved, but it has not proved reliable as a means of producing premature labour, and its use in this class of case is frequently a cause of delay in the actual induction of labour until several days after the date at which delivery is desired. It is therefore best reserved for cases that have reached term but have not fallen into labour, and whenever it is used it should not be persisted in after its failure to promote labour in the first 24 to 36 hours.

The instrumental methods are more reliable in their action and should be resorted to early if the medicinal method has been tried and failed. These methods are practically all identical; the introduction of a foreign body into the uterus. In the case of contracted pelvis the head is not in its physiological position in the brim of the pelvis, and the introduction of two of three bougies into the body of the uterus does not always stimulate action. The author's method by the use of a soft rubber stomach tube coiled below the presenting part simulates the physiological action of the head, and is rather more effective than the use of bougies, but its introduction requires a little more technical skill. It has proved most efficient, and failures or complications have invariably been associated with a failure to make the tube coil properly below the fœtal head; the tube passing up in the manner of a bougie into the body of the uterus.

It must be reiterated that to obtain the best results from induction of labour, whether at term or premature, it is essential that labour

shall be stimulated without undue delay, and it must be recognized that if the onset of labour, owing to failure of the method adopted, is unduly delayed the value of the treatment is depreciated, as the prolongation of pregnancy by even one week in the last three weeks of gestation means the addition of nine to fourteen ounces to the weight of the fœtus, and this may be sufficient to turn the scale in favour of serious disproportion.

Before considering the steps of a trial of labour it is necessary to consider certain facts and phenomena of labour and the variations from the normal that may develop in the presence of disproportion. It is by the observation of these variations that the progress in a trial of labour is estimated.

Presentation. The risk of malpresentation is not greatly increased by contraction of the pelvis, unless this is of a major degree. If a breech presents it should be converted to a vertex before labour. When labour starts, the head nearly always presents as a true vertex presentation, it is high above the brim, but the lower segment applies itself to the head in quite the normal manner.

Dilatation of the Cervix. The dilatation of the cervix proceeds in proportion to the pains, and the bag of membranes acts upon the internal os. The membranes are protected from abnormal tension by the lower segment of the uterus applying itself to the head. The internal os dilates and then the cervical canal begins to be taken up, but the head comes down very slightly, as it is still prevented from entering the brim by the surrounding uterine tissue. When the pains relax, the uterus becomes soft and the head recedes so as to cease to apply active pressure upon the uterine tissues interposed between it and the bony points of the pelvis. At the onset of the next pain the head is driven down again to apply active pressure on the tissues between it and the brim, but prior to the active pressure, the tissues of the lower segment of the uterus are drawn up on the head by that amount to which they are relaxed by the previous dilatation of the internal os. This proceeds progressively with each pain until first the internal os and then the cervix and external os become sufficiently dilated to allow the head to pass through. The case has then reached the second stage of labour, "full dilatation of the cervix," but the head is still above the brim. The next pain drives the head down and, at the same time, draws the uterine tissues up on the head to the greatest circumference of the presenting part. The tissues are no longer interposed between the head and the brim, with the result that the head rapidly passes the brim and enters the cavity of the pelvis (Figs. 4 and 5). As the head advances the membranes are directly stretched and rupture so that

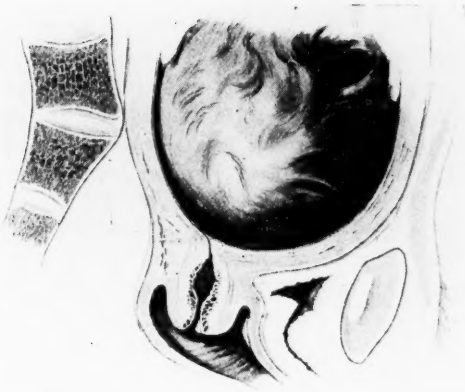


FIG. 4.

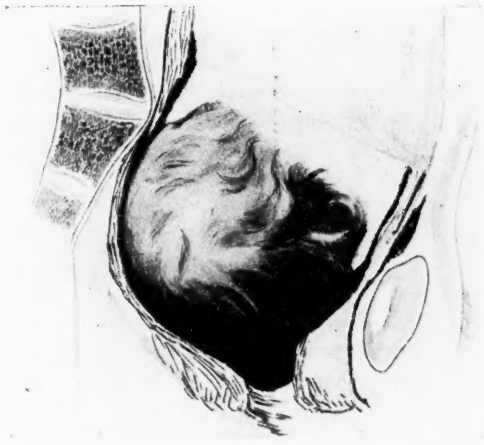


FIG. 5.
The upper figure shows the head held above the brim by the soft tissues.
The lower figure shows the head having easily entered the brim when the soft tissues are removed.

the waters come away at the same time as the head passes the brim and enters the pelvic cavity.

Rupture of the Membranes. In normal labour the membranes rupture as a result of the advance of the head through the cervix when full dilatation of the os is reached, and the coincident retraction of the cervix over the greatest circumference of the presenting part. During the whole of the first stage the membranes are protected from excessive pressure by the lower segment of the uterus applying itself to the head. The same holds equally true in the case of a high head with a contracted pelvis. If the membranes rupture during the first stage of labour as the result of a pain, it can only be due to some fault in the mechanism by which the lower segment applies itself to the head. Such a fault may be due to a malpresentation that has been overlooked, such as a face or compound presentation, or it may be due to deflexion of the axis of the uterus in a relaxed abdomen, or an excess of liquor amnii, and it may be due to excessive over-riding of the head in contracted pelvis, which has caused obliquity to develop. It is essential that the cause of rupture of the membranes should be investigated, and this investigation must include a vaginal examination. If the cause is a malpresentation or a compound one, that condition calls for attention. If it is due to a relaxed abdomen and deflexion of the uterine axis, or an excess of liquor amnii, the escape of the waters will probably allow the lower segment to apply itself to the head and correct the deflexion, so that the head enters the internal os and completes dilatation quite as well as the bag of waters would have done. On the other hand, when actual excess of disproportion is the cause of the early rupture, the head cannot enter the internal os; dilatation comes to a standstill or even recedes, and subsequent uterine action only stretches the lower uterine segment, with the formation and progressive rising of a Bandl's ring.

On the whole, the first stage of labour and the rupture of the membranes are not affected by contraction of the pelvis, except with marked disproportion or secondary conditions. The first stage of labour proceeds normally in proportion to the uterine action, and is completed within a normal length of time, ending with the full dilatation of the os and rupture of the membranes. Rupture of the membranes before labour or early in labour does not entail the drainage away of the liquor amnii, unless it is associated with or due to some condition which prevents the presenting part entering the brim and filling the lower uterine segment and cervix. If this is able to occur there is no delay or prolongation of the stage of dilatation.

Second Stage of Labour. In normal labour when the cervix has reached full dilatation, the head is no longer held up by a diaphragm of soft tissues. It passes the brim of the pelvis and enters the roomy cavity; there is nothing to stop its descent until it comes to the tissues of the anatomical perinæum, when it is actually in contact with the coccyx and the outlet of the bony pelvis. The same holds good in the case of contracted pelvis, provided there is not actual disproportion between the size of the head and the diameters of the brim. In a case of disproportion, the engaging diameters of the head are greater than one of the diameters of the brim; the head will come to rest against the extremities of the short diameter of the brim, and will not pass the brim until its diameter is reduced by compression.

Moulding. In normal labour, moulding of the head beyond the mere taking up of the slack of the tissues is not a natural phenomenon. The soft tissues of the uterus do not exert a sufficiently continuous pressure on the head to develop a persistent distortion, and when the soft tissues have slipped above the head there is actual free space around the head between it and the whole of the pelvic bony walls. The same is true in contracted pelvis provided there is no actual disproportion at the brim and there will then be no disproportion in the cavity. If the diameters of the head are greater than one of the diameters of the brim, persistent compression of the head must be produced to allow the head to pass the brim, and this moulding may be maintained if the pelvic cavity is narrow, or again be required at the level of the ischial spines, the space between which is little more than that in the shortest diameter of the brim. When the disproportion is great the membranes will rupture before the cervix has reached full dilatation, and the liquor amnii will drain away, as the lower segment will not apply itself to the head. The dilatation of the internal os will be delayed by interference with the free retraction of the cervical tissues. If the cervix ceases to dilate, the lower segment of the uterus becomes stretched by excessive retraction of the uterine muscle. This produces increased intra-uterine tension maintained between the pains, the head does not become freed from pressure, and moulding develops during the first stage of labour. Moulding at any time of labour must be looked upon as evidence of a degree of disproportion, but when it develops before the full dilatation of the os it may always be taken as indicating an excessive degree of disproportion. Moulding may be effective in enabling a too large head to pass the brim, but whenever it is marked, it is dangerous, and must never be forced beyond what is effected by the natural forces, as these are capable of producing an excess.

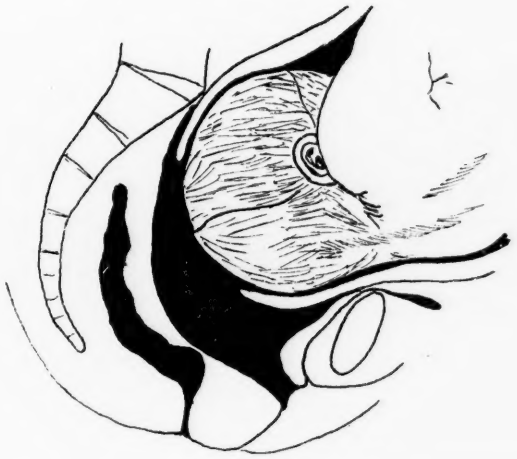


FIG. 6.

Hyper-flexion producing posterior fontanelle presentation due to increase of resistance to the passage of the head through the brim.

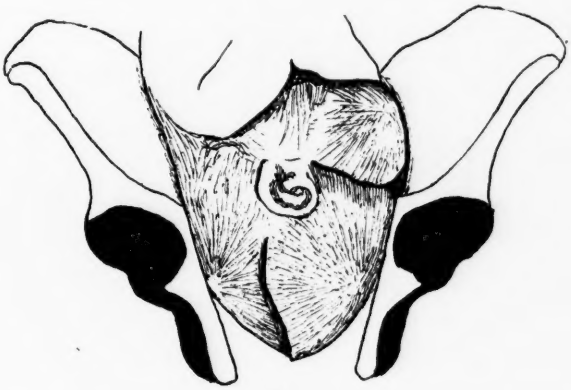


FIG. 7.

Posterior fontanelle presentation undergone moulding owing to the head being too large for the brim. The head in transverse of pelvis to show the reduction in the occipito-parietal angle.

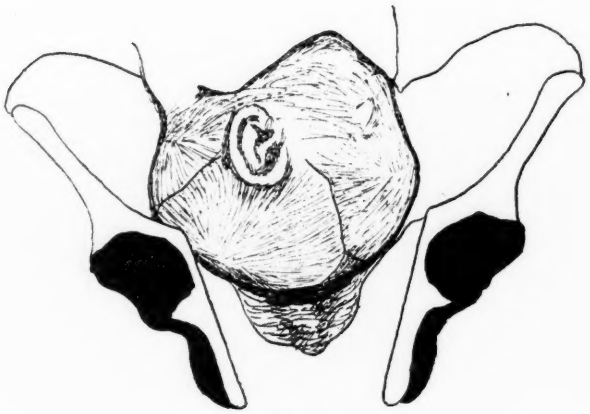


FIG. 8.

Head in transverse of pelvis and moved towards side of occiput, with parietal eminences out of middle line and anterior third of sagittal suture lowest.

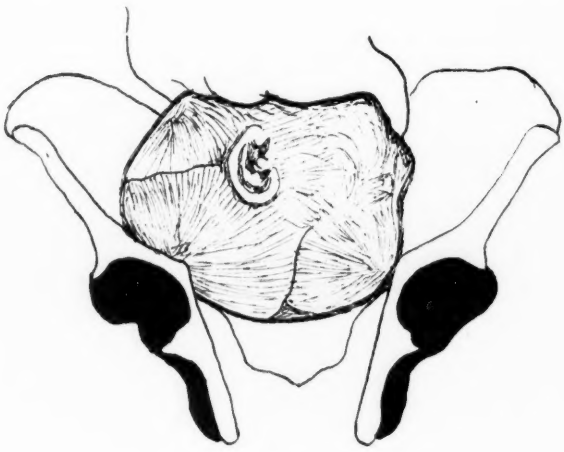


FIG. 9.

Head in transverse of pelvis with excessive movement to side of that the occiput is arrested on side of brim and the head has moved into anterior fontanelle presentation.

Changes from Vertex Presentation. In a normal case the fœtus assumes an attitude of complete flexion. When the head is driven down, it goes sufficiently further into flexion to establish a condition of stability with the body sufficient to counteract the forces driving it down. This degree of stability is attained when the head has flexed, so that the posterior third of the sagittal suture becomes the lowest part of the head, i.e., vertex presentation. In a case of contracted pelvis the head behaves in the normal manner while the membranes are intact. If the membranes rupture during the first stage of labour on account of there being some degree of disproportion or if, when the cervix has reached full dilatation and been removed out of the way, the head is arrested at the brim, extra force is required to drive the head down. This force has to be counteracted so as to re-establish stability of the head on the body, and stability is re-established most commonly by the head passing into a further degree of flexion, and the posterior fontanelle becoming the presenting part.

Posterior Fontanelle Presentation. Posterior fontanelle presentation must be recognized as evidence of a degree of disproportion; it always precedes moulding of a head which becomes fixed as a vertex presentation (Figs. 6 and 7).

Anterior Fontanelle Presentation. The development of an anterior fontanelle presentation is not common; it primarily arises from the head being arrested at the brim, but only develops in those cases in which the head is arrested by its bi-parietal diameter in the conjugate, the transverse diameter being ample, i.e., simple flat pelvis. In these cases, when the head is first arrested it is unstable, and naturally moves away from its sinciput in the direction of the larger occiput. It can do this by reason of the ample transverse diameter. If in the process of moving laterally, it brings a diameter of the head approaching the bi-temporal diameter to engage in the conjugate, the head is enabled to pass the constriction with little or no movement out of the normal vertex. But if the head has to move laterally until the occiput comes into contact with the lateral wall of the pelvis, the occiput will be delayed and the head will unflex, so that the anterior fontanelle presents, and then the head becomes impacted, or may gradually move into extension with the development of a brow presentation (Figs. 8 and 9).

Anterior fontanelle presentation must be accepted as evidence of an excessive degree of disproportion, but movement towards an anterior fontanelle presentation so that the anterior third of the sagittal suture presents, may be favourable in simple flat pelves, and is part of the mechanism of labour described as associated with this type of pelvis.

Asynclitism Two other movements of the head from a vertex presentation occur; they produce, respectively, anterior and posterior parietal presentation, and they are both the direct outcome of excessive disproportion. Anterior parietal presentation is much the more common, owing to the fact that a degree of disproportion which causes asynclitism usually also causes pendulous abdomen. It is quite erroneous to assume that either of these movements of the head is favourable. They both occur in the generally contracted flat type of pelvis, after the head has moved laterally and become arrested. Swinging of the head on its fronto-occipital diameter will never bring a smaller transverse diameter of the head than the bi-parietal or bi-temporal to engage. The reason why an anterior parietal presentation is sometimes considered to have been favourable is because when the head engages after having moved laterally, it has also slightly unflexed. The moulding of the head forces one parietal bone, more commonly the anterior, to over-ride the other, and if the head comes through the brim by virtue of this moulding, the whole of the over-riding parietal bone is felt, while the over-lapped bone is obscured. This gives the impression that the sagittal suture has moved out of the axis of the pelvis. In fact, the head is still synclitic (Figs. 10, 11, 12). It is possible, but improbable, that the head will come through with either parietal bone over-riding, and as the posterior bone seldom over-rides, success with this is very rare, but the author has seen a case.

Asynclitism must be looked upon as evidence of absolute obstruction, and moulding which simulates asynclitism is always dangerous although it may enable delivery to be completed.

A Trial of Labour. When a woman who is a potential case of disproportion goes into labour, whether that labour is spontaneous or induced, she must be placed under the observation of an obstetrician capable of recognizing all the phenomena referred to above, at their earliest development, and who is in a position at any time during the progress of labour to make these observations and carry out any surgical treatment that may become indicated. This can be obtained in the well-equipped maternity hospitals. The resident staff can do the observation, and the visiting staff can do the surgical treatment. This management should be obtainable in any Institution which accepts the responsibility of complicated obstetric cases. It entails the inclusion in the resident staff of at least one member who has had a good previous special training in obstetrics. It is not supplied by the recently-qualified house physician or surgeon, nor by the most experienced obstetric sister. It can be obtained in private practice by the employment of a qualified obstetrician, but it is not supplied by the employment of the general practitioner, unless he is, as many are, also a skilled obstetrician. It is practi-

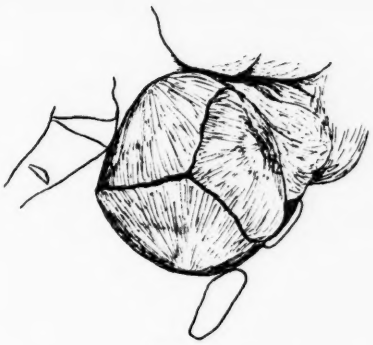


FIG. 10.
True asynclitism Anterior parietal presentation.

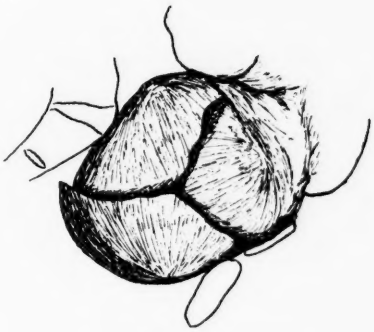


FIG. 11.
Asynclitism with moulding.

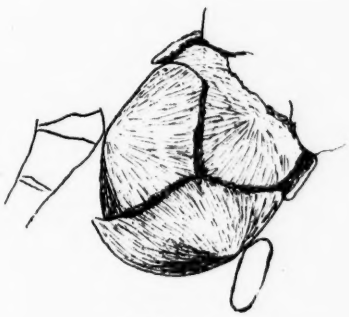


FIG. 12.
Moulded head. Simulating asynclitism.

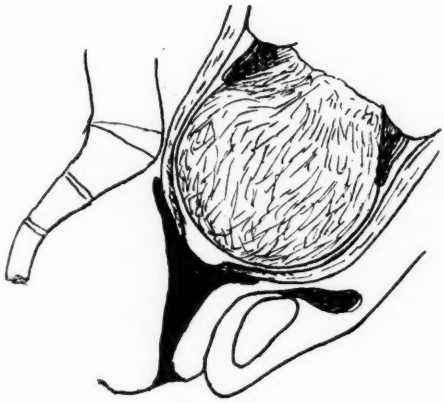


FIG. 13.
Cervix taken up. Normal bag of waters. Prognosis good.

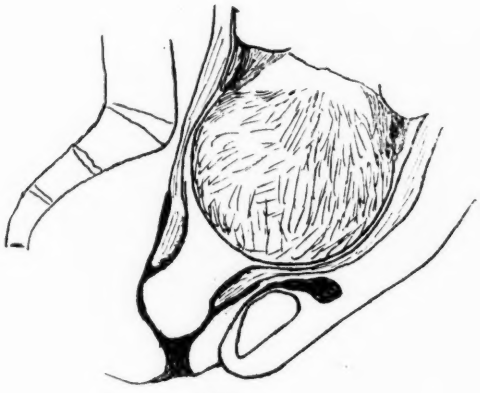


FIG. 14.
Cervix not taken up. Large bag of waters. Prognosis bad.

cally never obtained by the employment of midwives, who fall back on the first qualified practitioner on the hazard only when the patient has developed symptoms of distress.

A trial of labour is not confined to labour at term; it should be adopted by the induction of premature labour, at any time that the fœtus is considered to have reached a size only compatible with the pelvis. If induction was performed at the time of election, delivery will be easy, unless a mistake has been made. It is when a woman is not seen until there is doubt about the compatibility that an induced trial of labour is advised, so as to let the natural forces of labour come into play. It is universally recognized that the head under the influence of the natural forces is the only true means of gauging the capacity of the pelvis.

When the patient has started labour she should be kept in bed. The lie of the fœtus and the action of the uterus should be noted, and narcosis is usually beneficial in a primigravida. There is then nothing more to be done until the pains are well established, and some dilatation of the cervix may be expected to have occurred.

(I) A vaginal examination is then made, but when the conditions are considered relatively good by abdominal palpation, a rectal examination will usually be sufficient at this time. The head still will be high. The points to be noted are, how the cervix is dilating, and how the membranes bulge at the os during a pain.

(*a*) In the majority of cases the cervix will have been taken up and be well applied to the head at the end of four to eight hours, and the external os will admit two or three fingers. The membranes will be applied to the ring of the os, and will not bulge more than normally; the head will be too high to make out more than its presence, and to feel the sagittal suture in the axis of the brim. Fig. 13). These cases are favourable with a high probability of spontaneous delivery. Rupture of the membranes is unlikely to occur before the cervix has almost, or actually, reached full dilatation.

(*b*) In a small number of cases the cervix, although dilated to admit two, or three, fingers, will not be well taken up and applied to the head; it will give the impression of slightly sagging down into the vagina and, during a pain, of there being rather more waters in front of the head than normal. The prognosis is not bad, but the membranes are likely to rupture during the first stage.

(*c*) In a few cases the membranes will be found bulging in a large bag into the vagina, with the cervix, although dilated to admit two fingers, still projecting as a definite vaginal cervix. It has not been taken up. The prognosis for pelvic delivery in these cases is definitely bad, and very early rupture of the membranes is certain. These cases may be submitted to Cæsarean section without further

delay, but after a fuller examination under an anæsthetic in the case of a multipara in order that a compound presentation which had not been diagnosed by abdominal palpation may be excluded. At the same time, the membranes may be punctured with advantage, so as to prevent their rupture during a pain, and the risk of the cord being washed down by the violent rush of the liquor amnii.

(II) *Examination at Time of Rupture of Membranes.* The next examination of the patient must be made as soon as possible, and that should be at most within half an hour after the rupture of the membranes. If many hours have elapsed, as in the ordinary course of labour, before the membranes rupture, the patient should have been looked at once or twice, or more, merely to note progress, and to avoid over-looking a quiet rupture of the membranes with leakage of the liquor amnii, but without a demonstrative rupture, which will be noted by the nurse.

(*a*) The majority of cases will have continued in quiet labour for a reasonable length of time, the cervix will have reached full dilatation, and then the membranes will have ruptured. At this time there will be no difficulty in the palpation, and the uterus will never have developed tonicity, and will, therefore, relax fully between the pains.

1. If the head is found by palpation not only to have entered the brim but to have sunk well down, the next few pains will drive it on to the perinæum, and it can be palpated through the perinæum between the coccyx and the anus. The difficulty is passed; there was no actual disproportion, delivery will be easy, and a rectal examination will confirm the facts made out by palpation.

2. If the head is found by palpation not to have entered the brim and sunk well down, a vaginal examination must be made. The cervix may have reached full dilatation, or nearly so; the head will have engaged in the brim as a vertex with the sagittal suture closed, or slightly over-lapping in the axis of the brim. The head is slightly too large for the brim and only requires moderate reduction by moulding. This can be safely waited for, and the head will come down to the outlet in a reasonable time. Delivery can be safely effected with the aid of the forceps, applied when the head is low down. The slight delay in the second stage may produce some secondary inertia. Posterior fontanelle presentation may develop, or the head may come down slightly unflexed in a simple flat pelvis.

(*b*) The membranes may have ruptured when the cervix had reached a dilatation of only from three fingers to two-thirds of full. These are the important cases. In all, the head will be still high.

1. If the head has entered the brim as a vertex and the cervix is crowning the head—that is, applied in an even ring with the

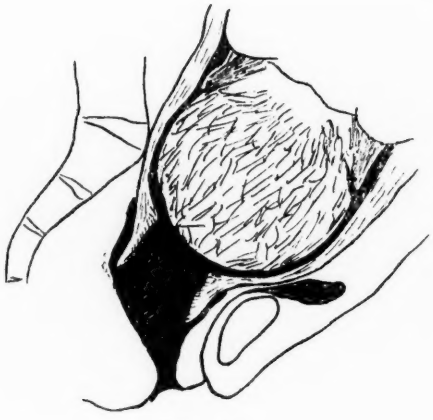


FIG. 15.
Membranes ruptured. Vaginal cervix re-formed. Prognosis bad.

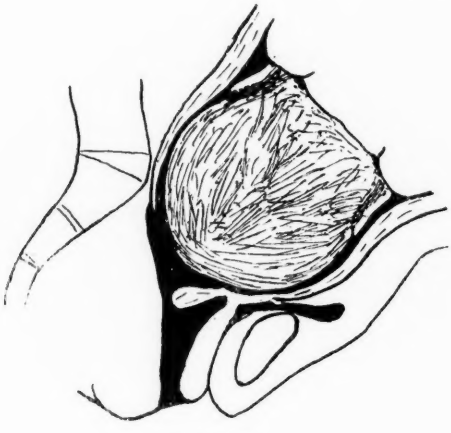


FIG. 16.
Cervix moved back on head. Posterior lip thinned. Anterior lip elongated and thickened. Prognosis bad.

edges of the external os, thinned in a primigravida, or only rounded in a multipara (Fig. 6)—the prognosis is still good, and labour may be allowed to proceed. The early rupture of the membranes may have been due to obliquity of the uterus from relaxed abdominal wall in a multipara, or a slight excess of liquor amnii in a primigravida, and these cases will deliver themselves, or at most require delivery with the forceps when the head is on the perinæum. At this time it is esential that a malpresentation or a compound one shall be definitely excluded; it may have been overlooked at the examination before the membranes ruptured.

2. If the cervix instead of crowning the head, has reformed a vaginal portion, the head is so much too large for the brim that it cannot come down to take the place of the membranes and continue dilatation. (Fig. 15). The prospect for pelvic delivery is absolutely bad, and Cæsarean section is indicated. There is no distress of either mother or infant, and therefore there is plenty of time for the operation to be performed under ideal conditions, and give perfect results. There is one exception to the above: in a multipara with relaxed abdominal walls, the head may not descend owing to obliquity of the uterus, which has not become rectified by the rupture of the membranes. Such a case must be judged by the previous history of the patient and her abdominal condition, and if the obliquity is the only cause of the non-descent of the head, the case is eminently suitable for treatment by internal version, which can easily be performed at this time.

If these cases are allowed to persist in labour asynclitism may develop, or the head may move into a brow presentation. It may, but is not likely, to develop posterior fontanelle presentation and mould, as this entails fixation in the brim. In any case it is not justifiable to delay; the time for interference has arrived, and it is indicated. Further delay may result in a few cases even delivering themselves, but the others will, in a few hours, begin to develop symptoms of distress, with tonicity of the uterus, loss of vitality of the fœtus and the multipara may even rupture the uterus.

(III). A third vaginal examination is required within four hours of the rupture of the membranes in all cases that have not delivered themselves before that time. This will apply only to a few cases referred to in paragraph II, (*a*) 2, but a fairly large number of cases referred to in paragraph II, (*b*) 1, which have not delivered themselves.

(*a*) The cervix will have continued to dilate and have reached full dilatation.

1. In the few cases from II, (*a*) 2, and many of the cases from II, (*b*) 1, the head will have passed the brim and be on the perinæum.

It will be synclitic with a posterior fontanelle presentation and moderate moulding, or in a flat pelvis it may be slightly unflexed and moderately moulded. In these cases delivery can be completed at once by application of the low or middle strait forceps. No more moulding will be required and the natural forces have done all they should be reasonably asked to do.

2. In a very small number of cases from II, (*b*) 1 the head will be still engaged in the brim and moulded so that it comes to occupy a large amount of the pelvic cavity, and may even be visible when the vulva is opened, but the greatest diameter has not passed the brim. (Fig. 7). The passage of the brim, if effected at all, may entail excessive moulding. The mother and fœtus are still in good condition, showing no distress, but further effort will not produce advance. The forceps will effect delivery, but this may be difficult and may entail risk for the fœtus. Pubiotomy will produce the necessary extra space in the brim. The forceps may be tried with moderate traction, but if this is not sufficient, pubiotomy should be resorted to, and if this is not adopted, delivery should be completed by Cæsarean section, which will still give perfect results.

(*b*) The cervix has ceased to dilate and has moved backwards on the presenting part, so that the posterior lip is thinned, and the anterior lip is elongated. (Fig. 16). The condition is a little worse than that described in the paragraph above, III, (*a*) 2, and the treatment is the same, with a lesser prospect of success by the application of the forceps, which should only be tried if the cervix is almost fully dilated and the posterior lip out of reach, although the anterior lip is still definite. Pubiotomy may be required and the condition is not so favourable as when the cervix has already gone up.

(*c*) The cervix has reformed a vaginal portion with the inner os partially closed down and the external os relatively more dilated. (Fig. 15). The head will be still free above the brim, often asynclitic or partially extended. The proper treatment, without alternative, is Cæsarean section.

The conditions described in the paragraphs above; III, (*a*) 2; III, (*b*) and III, (*c*) are essentially the cases in which the forceps are applied at the present time with disastrous results, and to the exclusion of proper treatment, or that are carried on in labour until maternal distress has developed with serious attrition, or even necrosis, of the soft parts. Whereas, at the time in labour indicated for the examination to be made at which the above unfavourable signs will be found, the women and infants are still in good condition and symptoms of distress will not develop for some hours.

The whole aim and object of a trial labour is to have every patient who can be safely delivered through the pelvis, delivered in that way, and to have those who cannot be delivered safely through the pelvis, treated by Cæsarean section while conditions are still favourable for that operation. The management of subsequent confinements can be regulated by the experience obtained during the first trial of labour.

Vaginal Examinations. In a trial of labour two, or at most three, vaginal examinations are necessary. It is quite impossible to eliminate vaginal examinations from difficult midwifery, they are an essential part of the technique of a complete investigation. They can be omitted in a frankly normal case, but not otherwise, and they can be performed, if properly carried out, without in any way increasing the risk of sepsis, whatever subsequent treatment may be required.

The Forceps. There is a marked tendency to condemn the use of the forceps. The improper use of the forceps should be strongly condemned, but there is no gainsaying the fact that the proper application of the forceps is a most beneficial obstetric operation, which will never be displaced, as is constantly being demonstrated in the best managed obstetric clinics.

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The Relation of Dosage of Radium to age, in the Production of Amenorrhœa.

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This paper embodies some experiences in regard to dosages, gleaned from the treatment with radium, of 98 cases of menorrhagia not due to malignant disease.

All cases were treated at University College Hospital, and all these results are contained in the Annual Report of the Harker Smith Radium Registrar, Vol. V and VI (1927–1928). I am indebted to the Radium Committee of the University College Hospital for permission to make use of the *data* in these reports for this paper.

During the quinquennial period 1921 to 1926[1] 303 cases of malignant and non-malignant conditions of the body of the uterus and cervix were treated with radium. Excluding malignant disease and fibroids, 103 cases of non-malignant conditions were treated with radium, and of these the following 98 are briefly reviewed in regard to effect of dosage and the production of menorrhagia :—

1.	Menopausal menorrhagia ...	63
2.	Essential menorrhagia ...	23
3.	Dysmenorrhœa ...	10
	Cervicitis (chronic)	2

Part I.

This part contains the *data* from which the subsequent deductions are drawn.

A brief *resumé* of the cases is given, with notes on the results.

In Part II, all the cases mentioned in Part I are tabulated in chronological order—commencing with the age of the youngest patient treated; viz. 21. In addition, all cases which remain untraced are omitted from Part II, for reasons that are obvious.

1. MENOPAUSAL MENORRHAGIA.

TABLE I.

Cases recorded over a period of five years, 1921–1926.

Total number of cases treated	66
Cases treated and cured by one application of radium ...	55
Cases treated and cured by a second application of radium	6
Failure (Small dose)	1
Untraced cases	4

Dosages :—1200 mgm. hrs. of element to 1800 mgm. hrs. of element.

Average dose 1600 mgm. hrs. of element.

Smallest dose (Curative) 600 mgm. hrs. of element—case 76, patient's age 48 (cf. case 36, where 600 mgm. hrs. of element in patient's age 42 produced only six months' amenorrhœa).

Ages :—Average 46 years; youngest 38, oldest 56.

TABLE II.

Cases treated by a second application of Radium.

Case No.	Age patient	First dose Mgm. hrs.	Second dose Element	Result after second dose	Date of last note
25	38	1200	1800, 6 mths. later	A	1⅔ yrs.
33	41	1500	600, 3 years later	A	3 mths.
34	41	1200	1200, 10 mths. later	A	2½ yrs.
38	42	800	600, 8 mths. later	A	3 yrs.
53	45	1500	1500, 15 mths. later	A	1 yr.
—	52	1500	900, 1½ years later		untraced

[A = Amenorrhœa].

ROUTINE PROCEDURE AND TREATMENT.

Over a period of five years, and up to November 1926, a sequence of 66 cases of menopausal menorrhagia were treated with radium. One case died three years after treatment, being cured of her symptoms up to the time of her death which was from some other cause. Four cases are untraced. The remainder are all cured with one exception, and this case did not attend for a second dose.

In the earlier half of the series, the dosage was 1200 mgm. hrs. of the element, but later on 1800 mgm. hrs. of the element was adopted as the standard curative dose for menopausal menorrhagia.

All these cases were subjected to the usual radium routine of examination under general anæsthesia, dilatation of the cervix and curettage of the uterus, with microscopic examination of the curettings, to eliminate the presence of malignant disease. Now and then a latent case of carcinoma of the body of the uterus has been detected by this procedure.

A tube of 50 mgm. of radium element in a platinum container, the walls of which are 0.5 mm. thick, and covered by a 2 mm. rubber screen, is inserted into the uterine cavity and retained there

for periods varying up to 36 hours. No untoward results directly referable to the radium have been noted, with the exception of occasional cases of persistent vomiting, the cause of which may be the presence of the foreign body in the uterus. No case of persistent pyrexia due to the treatment has come to our notice (cf. carcinoma of the cervix). In no case in which the 1800 mgm. hrs. of element dosage has been adopted, was it necessary to give a second application, as this dose was sufficient to produce amenorrhœa in all cases in which it was applied.

Results.

All traced cases were cured by adequate doses of radium.

A great number of the cases recorded have been kept under observation for up to five years after the initial treatment. In few cases have any untoward pathological lesion resulted in the pelvis from the radium and no case of either carcinoma of the cervix or the body has occurred in this series of cases, subsequent to treatment by radium.

That is to say, though many of these cases were submitted to curettage of the uterus, to eliminate the presence of malignant disease before treatment by radium, and though consequently we are dealing with potential cases of malignancy, the radium did not produce a carcinoma.

In addition, it may be added that up to November 1928[2] (a period covering seven years of radium treatment of these cases), a total of 80 cases of menopausal hæmorrhage was treated and in no case did malignancy supervene in any case treated by radium. This seems a fact worthy of note and it would imply that in expediting the menopause by radium, we have a prophylactic against malignant disease of the uterus. This, however, can only remain a suggestion from this small series of cases, and from the fact that sufficient time has not elapsed to come to a definite conclusion.

It may be noted that the smallest dose necessary to produce amenorrhœa was 600 mgm. hrs. of the element; case 76, patient's age 48.

Case 36, patient's age 42, had a return of bleeding following 12 months' amenorrhœa, resultant on a dose of 600 mgm. hrs. of element. This case is the only failure in the series and is obviously due to an inadequate initial dose (see later). The patient failed to attend for further treatment.

Now while these results of radium treatment are of interest *per se*, it is because in this group we have patients whose ages fall in the decade 40 to 50, that the chief value for summarizing exists. Thus the effect of various dosages of radium element, in regard to the production of amenorrhœa, in patients of these ages, can be noted.

In the following groups we have patients below the age of 40 and a brief summary of the results is added.

2. Essential Menorrhagia.

These include cases of intractable menorrhagia not due to the menopause, in which, clinically, there is no pelvic abnormality. These cases have usually had curettage (many cases two or three times) with no effect on the menorrhagia, in the direction of amelioration of the symptom.

Table III.

Summary.

Number of cases recorded	23
Cases with periods resulting	16
Cases with amenorrhœa after radium (three cases required second dose)	5
Permanent cure (amenorrhœa), or improvement ...	19
No improvement (one dose)	1
Untraced (including one case after second dose) ...	3

Up to April 1928 twenty-three cases of essential menorrhagia in young women are recorded, and the table, embodying age of patient, dose of radium and result, is of interest in revealing the amount of radiation to which a young woman can be subjected, without necessarily producing amenorrhœa.

Five cases (in two of which a second dose was necessary) had subsequently amenorrhœa; sixteen cases had a restoration of the normal menstruation. All cases improved as a result of treatment.

Case 178 (Hospital number) is of interest. This patient became pregnant 16 months after a radium treatment of 400 mgm. hrs. The child was born in 1926 and had a double inguinal hernia.

Radium is thus a distinct adjunct in the treatment of this condition. The younger patients will stand much bigger doses than those at the climacteric. A dose such as 1800 mgm. hrs. of the salt, which will with certainty produce a cessation of menstruation in the menopausal case, will not produce amenorrhœa in the young woman. Radium therapy has usually been invoked after medicinal measures and curettage have failed to stay the progress of the condition.

The patients stand large doses very well and radium treatment may be administered with safety. It is in these cases of intractable hæmorrhage that the pre-eminence of radium, as a curative measure, finds its place.

When an artificial menopause is required, a large dose, repeated if necessary, becomes a necessity. In the latter part of this article an indication is given of the dose necessary.

In the two tables that follow, one contains the cases in which amenorrhœa resulted from the radium treatment—with one or two treatments; the other contains the cases in which no permanent amenorrhœa resulted.

TABLE IVa.

(*a*) Cases with amenorrhœa resulting.

Case No.	Age patient	First dose Mgm. hrs.	Second dose Element	Result after second dose	Date of last note
116	32	1200	———	A	1½ yrs.
118	33	800	1200, 9 mths. later	A	4 yrs.
246	40	1500	1500, 1 year later	A	1 yr.
325	27	1000	1200, 5 mths. later	A	1 yr.
326	31	1800	———	A	1½ yrs.

[A—Amenorrhœa].

TABLE IVb.

(*b*) Cases with no amenorrhœa resulting.

Hospital No.	Age	Dose	Result and date of last note.
117	37	600	Normal periods, 2½ years.
178	30	400	Normal periods, 3½ years. (Child born 2 years after treatment).
179	31	1200	Normal periods, 8 months.
180	33	1500	Normal periods, 3½ years.
181	29	800	Normal periods, 3½ years.
182	38	2500	Normal periods, 3 years.
242	28	1000	Normal periods, 1½ years.
244	33	200	Normal periods, 2 years.
245*	40	1800	Periods, 1 year.
323	37	600	Normal periods, 1½ years.
394	36	1200	Normal periods, 1 year.
395	30	2300	Periods, 6 months.
244	33	1200	Normal periods, 2 years.
396	21	400	Normal periods, 1½ years.
480	24	1200	Normal periods, 1 year.
481	33	1600	Normal periods, 1 year.
482	38	1500	5 months amenorrhœa, then normal periods.

3. DYSMENORRHŒA.

From 1921 to 1928 ten cases of this condition were treated, with satisfactory results in all cases, either with or without the production of amenorrhœa. The following table is appended showing the age of patient and effect of the dose on periods.

*This patient had a second dose of 1000 mgm. hrs., one year after the first, but was untraced subsequently.

At the end of the table are added two cases of chronic cervicitis, which were treated with radium and in which note was made of the effect on the periods.

The kind of dysmenorrhœa and the results do not interest us here, except in as much as we have in this group 12 cases in which the relation between age, dose and production of amenorrhœa can be noted.

TABLE V.

DYSMENORRHŒA.

Hospital No.	Age	Dose	Result with date of enquiry	Effect on periods.
137	41	1800	Cured – 2 years	Amenorrhœa
268	24	1500	Cured – 3 years	Periods regular.
269	38	1500	Cured – 2 years	Amenorrhœa after
		1500		second dose.
270	34	1500	Cured – 2 years	Periods regular.
271	27	1200	Cured – 8 months	Amenorrhœa.
		1500		
337	38	1500	Cured – 2 years	Periods regular.
338	35	1500	Cured – 1 year	Amenorrhœa.
339	42	1500	Cured – 1½ years	Amenorrhœa.
409	41	1500	Cured – 1½ years	Amenorrhœa, 1½ yrs.
497	24	1000	Not improved	Periods the same, 3 mths.
			CERVICITIS : (CHRONIC).	
340	45	500		Amenorrhœa, 9 mths.
		1000		
341	42	500		Periods. 18 mths.

PART II.

In this part all the cases mentioned in Part I are tabulated in order of age.

This table contains 89 cases, starting from the age 21 to the age 50. It gives the age of each case, the dosage administered, and the result with the date of the last note.

All cases over the age of 50 are omitted.

TABLE VI.

Group V (11 cases).

No.	Hospital Report Number	Disease	Age	Dose Mgm. hrs. Element	Result	Date of last note (After treatment)
1	396	E M*	21	500	P	1½ years.
2	243	E M	23	500	P	1½ years.
3	480	E M	24	900	P	1 year.
4	268	D	24	1500	P	3 years.
5	497	D	24	800	P	3 months.
6	325	E M	27	1000	P	6 months; later 1200 : amenorrhœa 1 year.
7	271	D	27	1200	P	6 months; later 1500 : amenorrhœa 1 month.
8	242	E M	28	1000	P	3 years.
9	181	E M	29	800	P	3½ years.
10	345	E M	30	2300	P	4 months.
11	178	E M	30	400	P	Pregnancy 2 years later.

Group IV (8 Cases).

No.	Hospital Report Number	disease	Age	Dose Mgm. hrs. Eliment	Result	Date of last note After treatment)
12	326	E M	31	1500	A	1½ years.
13	116	E M	32	1200	A	1 year.
14	118	E M	33	800	P	9 months; later 1200 : amenorrhœa 3½ years.
15	180	E M	33	1500	P	3½ years.
16	244	E M	33	1200	P	2 years.
17	481	E M	33	900	P	10 months.
18	270	D	34	1500	P	2 years.
19	338	D	35	1500	4 periods followed by amenorrhœa	1½ years.

Group III (11 Cases).

20	394	E M	36	1200	8 mths. later : 1800 : amenorrhœa.	1 year.
21	117	E M	37	600	P	2½ years.
22	323	E M	37	1500	P	1½ years.
23	269	D	38	1500		Amenorrhœa for 7 months, then periods.
24	337	D	38	1500		Amenorrhœa for 6 months, then periods.
25	179	E M	38	1200	P	8 months.
26	482	E M	38	1100	P	5 months.
27	182	E M	38	1500	P	3 years.
28	110	E M	38	1200	P	6 months; later 1800.
29	245	E M	40	1800		Amenorrhœa for 8 months, 1600 a year later–untraced.
30	246	E M	40	1500	P	15 months; later 1500 : amenorrhœa 1 year.

Group II (24 Cases).

31	137	D	41	1800	A	2 years.
32	109	M M	41	1500	A	Periods recurred after 18 months.
33	166	M M	41	1500 600	A	No amenorrhœa with first dose.
34	228	M M	41	1200 1200	A	No amenorrhœa with first dose.
35	339	D	42	1800	A	18 months.
36	14	M M	42	600	6 months amenorrhœa, then P.	
37	341	Cervicitis	42	500	6 months amenorrhœa, then P.	
38	172	M M	42	800 600	Amenorrhœa 3 years after second dose.	
39	173	M M	43	1500	A	3½ years.
40	174	M M	43	1500	A	1 year.
41	234	M M	43	1500	A	4 months.
42	237	M M	43	1800	A	2½ years.
43	227	M M	44	1800	A	1½ years
44	229	M M	44	1200	A	1¾ years.
45	315	M M	44	1500	A	1 year.
46	99	M M	45	1200	A	4 years.
47	102	M M	45	1200	A	2 years.
48	168	M M	45	1200	A	1½ years.
49	232	M M	45	1500	A	1½ years.
50	233	M M	45	1500	A	2½ years.
51	303	M M	45	1500	A	1½ years.
52	309	M M	45	1500	A	1½ years.

No.	Hospital Report Number	Disease	Age	Dose Mgm. hrs. Element	Result	Date of last Note
53	313	M M	45	1500 1500	A	1 year after second dose. (Case of polypus).
54	340	M M	45	500 1000	A	9 months after second dose.
Group I (35 Cases).						
55	100	M M	46	1200	A	4 years.
56	107	M M	46	1200	A	2 years.
57	113	M M	46	1200	A	4½ years.
58	165	M M	46	1500	A	2 years.
59	167	M M	46	1500	A	4 years.
60	175	M M	46	1500	A	3½ years.
61	230	M M	46	1500	A	½ year.
62	231	M M	46	1800	A	2¾ years.
63	235	M M	46	1500	A	2½ years.
64	241	M M	46	1800	A	2 years.
65	299	M M	46	1800	A	2 years.
66	304	M M	46	1800	A	1½ years.
67	314	M M	46	1800	A	1 year.
68	164	M M	47	1500	A	4 years.
69	177	M M	47	1500	A	1½ years.
70	236	M M	47	1500	A	2½ years.
71	301	M M	47	1800	A	8 months.
72	319	M M	47	1500	A	1 year.
73	104	M M	48	1500	A	3¾ years.
74	240	M M	48	1400	A	2¼ years.
75	108	M M	48	1500	A	3¾ years.
76	114	M M	48	600	A	2½ years.
77	307	M M	48	1200	A	1 year.
78	101	M M	49	1200	A	2⅔ years.
79	238	M M	49	1500	A	2½ years.
80	239	M M	49	1200	A	1½ years.
81	300	M M	49	1800	A	1 year.
82	305	M M	49	1000	A	1½ years.
83	105	M M	50	1200	A	2⅓ years.
84	318	M M	50	1500	A	1 year.
85	311	M M	51	1800	A	1½ years.
86	170	M M	52	1500 900	A	18 months, untraced after second dose.
87	310	M M	52	1500	A	1½ years.
88	312	M M	52	1800	A	1½ years.
89	315	M M	52	1800	A	1 year.

Discussion on the Table.

This chronological record reveals the fact which is generally known that the older the patient is, the smaller is the dose of milligramme hours necessary to produce amenorrhœa; and conversely, the younger the patient is, the bigger is the milligramme hour figure necessary to produce amenorrhœa.

Another point to be noted is that in all the cases recorded in this table, the uterus was of normal size. For this reason 74 cases

*D = Dysmenorrhœa; E M = Essential Menorrhagia; M H = Menopausal Menorrhagia; C = Cervicites, chronic; P = Periods prestnt,; A = Amenorrhœa.

of fibroids treated by radium are not catalogued with these cases, owing to the disproportion in the size of the uterus in each case.

The purport of this part is to propound, and to quote this table to prove the inverse law of dosage, viz:—"that in a patient with a uterus of normal size, the younger the patient is, the bigger is the milligramme hour dose of radium element necessary to produce amenorrhœa." This conclusion is put forward at this stage to enable the reader to follow the various deductions made under the group headings. The table is subdivided into five groups.

Group I	Patient's age	between		46–50
Group II	,,	,,	,,	41–45
Group III	,,	,,	,,	36–40
Group IV	,,	,,	,,	31–35
Group V	,,	,,	,,	20–30

Our knowledge in regard to dosages in patients from the age of 38 upwards is complete owing to the large number of cases that have been treated and definite deduction here can be inferred; on the other hand, there is a paucity of patients whose ages fall between the years of 20 and 30. Consequently this end of the menstrual curve is still to a large extent an unexplored one.

We start from the known (menopausal end) and proceed to the unknown (the puberty end). Thus group I includes patients whose ages fall between 46 and 50; group II includes those whose ages fall between 40 and 45 etc.

Discussion on tabulated results in Table VI.

Group 1.

Ages 46–50. The following points will be noted, that the minimum milligramme figure in this group is 1200. 35 cases are recorded: in seven cases 1200 mgm. hrs. were administered. In all cases amenorrhœa resulted. In one case (76) age 48, 600 mgm. hrs. was sufficient to produce the result. No case of failure with this dose occurred, so we may assume that for the epoch 45–50, 1200 mgm. hrs. will always produce amenorrhœa, and the nearer to 50 the patient's age approximates, the smaller the figure becomes —cf. case 76, referred to above, where in a patient of 48, 600 mgm. hrs. produced amenorrhœa.

Group II.

Age 41–45. Twenty-four cases fall in this group. The milligramme hrs. figure varied from 600 to 1800. The latter dose in all cases, when it was administered, produced the requisite amenorrhœa. Further deductions in this group must be made from the failure to respond to a single dose. The following doses

failed to produce amenorrhœa. They are abstracted from the table.

Case 33	age 41	1500	No temporary amenorrhœa.
Case 34	age 41	1200	No temporary amenorrhœa.
Case 32	age 41	1500	Periods recurred after temporary amenorrhœa.
Case 36	age 42	600	Amenorrhœa for six months only.
Case 37	age 42	500	Amenorrhœa for six months only.
Case 38	age 42	800	No amenorrhœa.
Case 53	age 45	1500	(Case of mucous polypus) Temporary amenorrhœa.
Case 54	age 45	500	No amenorrhœa.

Now in this group three facts stand out.

1. The nearer the age approximates to 40, the less likely is the dose of 1200 (effective in Group I) to produce amenorrhœa. Case 32, age 41, dose 1500 produced no amenorrhœa.

2. The dose 1800 mgm. hrs. shows no failure.

3. The dose 1500, out of 11 cases in which this dose figured, two failures only are recorded and this is explained in one case by the fact that the patient had a mucous polypus.

Hence the milligramme hour figure in this group necessary to produce permanent amenorrhœa must be above 1500 and below 1800. It is probably in view of the 80 per cent efficiency of the 1500 figure, not much above 1500; therefore this figure is definitely above the 1200, necessary to produce this end result in group I.

Group III and Group IV.

It is when we get to the cases in which the age falls below 40, that we find a paucity of cases and informative milligramme hours figures. This is accounted for by the fact that (*a*) not many cases under 40 lend themselves to radium therapy (*b*) when radium therapy is involved as a therapeutic measure, it is not always the desire of the surgeon to produce permanent amenorrhœa.

Having in view this small series of 30 cases under 40, compared with 59 the ages of which fall between 40 and 50, one cannot quote a parallel series of cases for each particular milligramme hour figure.

For practical purposes, group III and group IV are considered together in parts.

Group III.

Ages 35–40. Eleven cases fall in this group. The milligramme hour figure varied from a maximum of 1800 to a minimum of 600. The latter figure we can dismiss by saying that it produced no effects, temporary or permanent, in menstruation. Now six patients whose ages were each 38 were treated and the results were as follows:

Case 26	age 38	dose 1100	No amenorrhœa.
Case 25	age 38	dose 1200	No amenorrhœa.
Case 28	age 38	dose 1200	No amenorrhœa.
Case 23	age 38	dose 1500	Seven months amenorrhœa.
Case 24	age 38	dose 1500	Six months amenorrhœa.
Case 27	age 38	dose 1500	No amenorrhœa.

The inference to be drawn is that the figure 1500 mgm. hrs. is bordering on the minimum milligramme hour figure necessary to produce permanent amenorrhœa. Thus the milligramme hour figure of the patient's age 38 approximates to that of the patient's age 40–45. Note 1800 mgm. hrs. only produced eight months amenorrhœa in a patient at 40.

So our final figure must be even higher than this.

Note also case 25, age 38, dose 1200, produced no amenorrhœa, cf. Group I.

Conclusion: That to produce amenorrhœa in the patient whose age falls between 36 and 40, the milligramme hour figure must be greater than 1800. Conversely, a milligramme hour figure of less than 1800 will not produce amenorrhœa—or if so, only a temporary one which will pass off after a matter of months.

Group IV.

Ages 31–35. Only eight cases fall in this period. Here we note a dose of 1500 mgm. hrs. at 33 did not even produce a temporary amenorrhœa. Contrast this with a few months' amenorrhœa supervening on the patient aged 38 with this dose. That is to say, at 33 a bigger milligramme hour figure is necessary to produce the same effect as at, say, 38. Cases 12 and 13 appear anomalous. I cannot explain except to assume that the age volunteered by the patient was not a correct one. Both patients were single! On the positive side we have the evidence of case 14, when a dose of 1200 administered after a dose of 800, in a patient of 33 produced amenorrhœa; that is to say, 2000 mgm. hrs. of element in a patient of 33 produced amenorrhœa, when given in two doses.

Group V.

Ages 20–30. Owing to the scarcity of cases falling in this category, the evidence is of a sporadic nature. What we can say definitely is that a dose of 1500 at 24 (case 4) did not even produce one month's amenorrhœa; that case 10, patient's age 30, had a dose of 2300 without producing even one month's amenorrhœa.

Cases 6 and 7 had amenorrhœa after second doses, totalling in all 2200 and 2700 mgm. hrs. each respectively.

There are too few cases in this section to arrive at any positive opinion; but it can be said that in patients between 21 and 30, doses of 2300, 1500, 1200 may be administered without necessarily producing amenorrhœa.

It would be interesting to know the effect of a given dose of radium on the onset of menstruation in the pre-puberty period; in our series of cases no case under the age of 21 was subjected to radium therapy, so no information is at our disposal. It might reasonably be inferred that the dose of radium element necessary to prevent the onset of menstruation in the pre-puberty period must be a big dose; much bigger than 2300 mgm. hrs. and probably in the neighbourhood of 3000 mgm. hrs.

SUMMARY OF RESULTS.

Group I	46–50	1200	Amenorrhœa.
Group II	41–45	1500	
	41–45	1800	Amenorrhœa.
Group III	36–40	1800	This dose produced temporary amenorrhœa.
Group IV	31–35	1200	This dose produced no effect, temporary or permanent on menstruation.
	31–35	1500	This dose produce no effect, temporary or permanent on menstruation.
Group V	20–30	1500	
	20–30	2300	(external dose) Neither dose had any permanent or temporary effect on menstruation.

I have endeavoured to embody the *data* from the table in the accompanying graph.

(*a*) The unshaded area below the lower curve gives dosages that are known not to produce amenorrhœa at the particular age.

(*b*) The shaded area above the upper curve gives the dosages known to produce amenorrhœa at a particular age. This figure is obviously higher than the minimum dose required to produce amenorrhœa.

(*c*) The area between the upper and lower curves represents "unexplored territory" and is a lucrative field for further research.

(*d*) It will be noted that below the age of 21 the *data* cease.

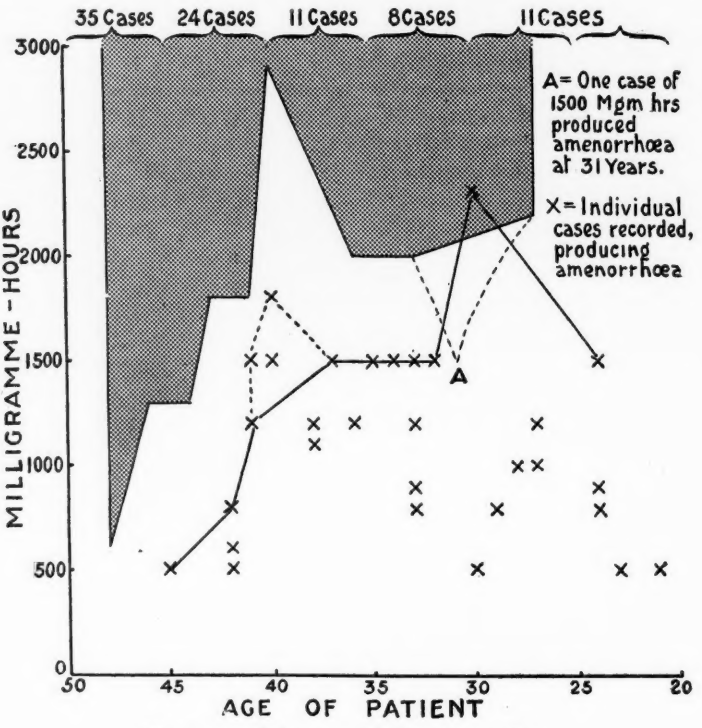

Chart embodying graphically the results.

1. Shaded area above, are dosages known to produce amenorrhœa at the particular age.

2. Unshaded area, below lower curve, are dosages known *not* to produce amenorrhœa at the particular age.

3. Area between upper and lower curves represents "unexplored territory."

The dotted line, in lower curve, indicates that a few months, i.e., a temporary amenorrhœa resulted from this dose.

Thus from the chart, it will be seen at a glance that a dose of 1500 mgm. hrs. of element

1. at 50, 47, 45 produces amenorrhœa.
2. at 40 a few months amenorrhœa.
3. at 35 no effect on periods at all.

The figures along the upper border give number of cases in each group. The ordinate and abscissa are age of patient and dose respectively.

Thus one can deduce from the foregoing *data* an inverse law of dosage. *That in a patient with uterus of normal size, the younger the patient, the bigger is the dose necessary to produce amenorrhœa.*

Of course it is self evident and almost axiomatic that the dying (menopausal) ovary will take less radiation to kill it than the actual "adolescent ovary." This paper with cases quoted purports to prove what is fundamental. This field of knowledge is well explored after 35; not quite so well explored between 30 and 35; still less between 20 and 30; there remains, therefore, a big field in the "puberty to 30" period, for research work in regard to dosage of radium necessary to produce amenorrhœa. One puts forward with a degree of confidence the suggestion that this figure will be greater than 2000 mgm. hrs for 25 to 30, and greater still for 20 to 25.

Two sets of micro-photographs are appended to show the effect of radiation on the uterine mucosa. The first section in each is from curettage; the second section from operative measures (hysterectomy).

Were the use of excessive doses of radium element (*e.g.* 4000 milligramme hours, or bigger) free from sequelæ, it would not be a matter of great importance what the dose was, provided it was bigger than the known minimum dose necessary to produce amenorrhœa.

But in the Harker-Smith Annual Radium Report (University College Hospital), for 1928, page 27, I recorded the following sequelæ which I had observed in the follow up of these and other cases.[1] The sequelæ followed on the use of large doses and were as follows:

1. Shortening and stenosis of the vagina.
2. Annular constriction of the vagina (hour-glass constriction).
3. Vaginitis—purulent.
   —adhesive.
   —obliterative.
4. Atrophy of portio vaginalis of the cervix.
5. Ovarian neuralgia.
6. Radium burn of the vagina.

Hence it behoves the surgeon to steer clear of the use of unnecessarily big doses.

It may be added that almost all these sequelæ were observed in patients of 40 or over; they were not observed in the young patients. This would go to support the contention put forward, viz., the younger the patient, the bigger the dose.

It is of interest to add, on the negative side, that in the series under survey :—

(*a*) No case of persistent pyrexia occurred (cf. carcinoma of the cervix).

(*b*) No case of pyometra was detected (cf. carcinoma of the cervix).

(*c*) To reiterate what was mentioned previously, that in no case in which radium had been administered, did a carcinoma supervene.

The cases have been followed up for many years after treatment, which has been practised now for over eight years.

Summary.

1. The results in 98 cases of patients between the ages of 21 up to the menopausal age treated with radium are investigated.

2. The relation between the "milligramme hour of element" figure and age of patient in relation to production of amenorrhœa is tabulated and discussed.

3. The inverse law of dosage is postulated—viz., that in patients between puberty and the menopause, with a normal sized uterus, the younger the patient, the bigger is the milligramme hour dose of radium element necessary to produce amenorrhœa.

4. Note is made of the fact that out of 80 cases of menopausal menorrhagia treated with radium, in no case did carcinoma of the cervix supervene subsequently, and the suggestion is put forward that in expediting the onset of the menopause with radium, we have possibly a prophylactic against carcinoma of the cervix.

5. Attention is drawn to certain sequelæ following on the administration of big doses.

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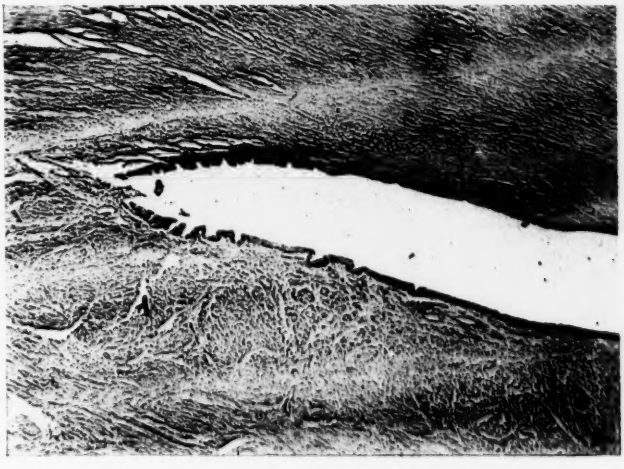
1. Asherson, N. "Harker Smith (Radium) Report for 1927, University College Hospital.
2. *Ibid.* Report for 1928.

Case 126. Age 25. Fibroids.

1. Section 163. Normal endometrium; $\frac{2}{3} \times 67$.
Before treatment.



2. Section 258. Section of uterus; $\frac{2}{3} \times 67$.
$5\frac{1}{2}$ months after radiation.

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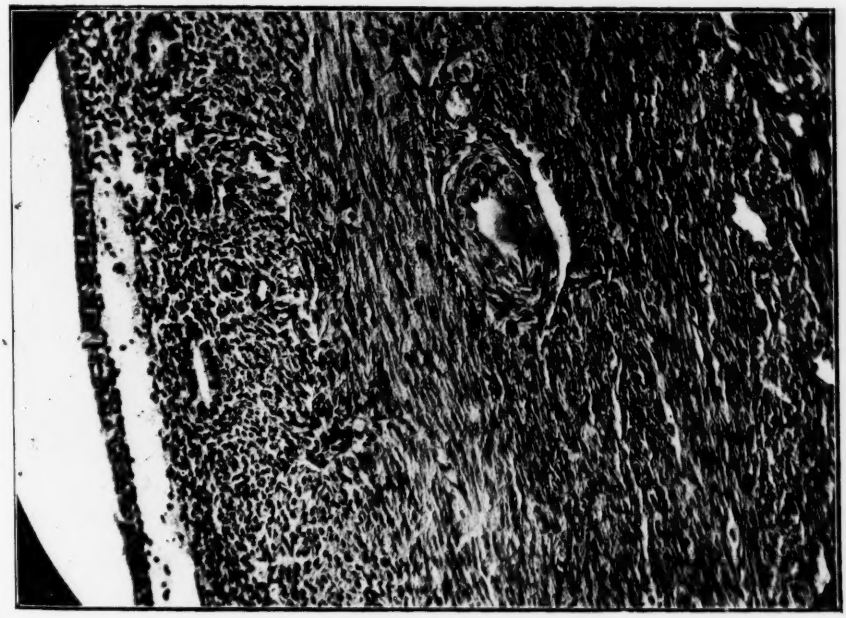
Case 194. Age 50.

3. Section 367. Normal endometrium; $\frac{1}{6} \times 300$.



4. Section 442. Section of uterus; $\frac{1}{6} \times 300$.
4 months after radiation.

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Clinical and Pathological Report on Three Unusual Ovarian Tumours.

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These three tumours are of interest, in that they have the general structure of fibromyomata, with the exception that they are permeated by epithelioid cells. The histological picture is similar in all three cases (Fig. 1.) These cells do not appear to be actively proliferating. This would seem to indicate that the tumours are not merely fibromyomata of the ovary, in which secondary carcinomatous infiltration is occurring.

A short account of the clinical history of each case, and of the structure of the tumour follows.

I.

A. Clinical Report.

The first tumour was removed from a patient aged 43, who complained of hæmorrhage of three weeks' duration. Puberty occurred at 18 years. The menstrual cycle had been regular, the period lasting from four to seven days. She had four children, the youngest eight years old. Subtotal hysterectomy with bilateral salpingo-oöphorectomy was performed on account of the presence of endometritis, chronic metritis, chronic sub-involution, double salpingooöphoritis with thickening of the Fallopian tube walls and fibrosis and small cystic degeneration of both ovaries. Ascites was not present. In the right ovary, near a fairly recent corpus luteum, the tumour was found, forming a solid oval mass the size of a pigeon's egg.

B. Pathological Report.

Macroscopical. The tumour is hard in consistence, and, on cutting into it, a grating sensation is obtained. Its cut surface

resembles an ovarian fibroma, being whitish and glistening in appearance. The tumour is surrounded by a definite capsule.

Microscopical. The tumour conists of a dense network of connective tissue almost exclusively composed of fibrous tissue cells enclosing a great number of irregularly shaped collections of epithelial-like cells. Hyaline degeneration is marked and commencing liquefaction is seen.

In the vicinity of some epithelial masses there is calcareous deposition. Some of the clusters of epithelium surrounded by a zone of calcification are degenerated and form a granular mass of protoplasm, staining deeply with eosin. Other epithelioid cell clusters have no distinct capsule, but hyaline degeneration is especially marked in the vicinity.

The epithelioid cells are in the form of islets of polyhedral cells, individual cells having a distinct outline (Fig. 2). The protoplasm is granular; it stains faintly with eosin, and many cells are vacuolated. The nucleus is centrally placed, oval in shape and fairly rich in chromatin. No mitotic figures are seen. The nucleus is somewhat small relatively to the size of the cell body. In this respect there is a resemblance more to the cells of the theca interna than to those of the membrana granulosa of the Graafian follicle.

The cells lying next the connective tissue are not more cylindrical in form, and do not resemble in arrangement those of the membrana granulosa, as do those in the carcinomata described by V. Mengerhausen,[8] V. Kahlden,[9] Lönnberg,[27] Schröder,[28] Liepmann[29] and others. The groups vary much in size and shape. In the rounder groups a radial arrangement of the cells is seen, and in the others a tendency to form columns is present, so that the long axes of the nuclei run approximately parallel to one another.

The degree of vacuolation varies. Where it is marked, only a rim of protoplasm is seen and the nucleus is distorted and flattened. In places vacuolated cells line an irregularly outlined space which appears to have been formed by the breaking down of several cells. Sometimes the space is regular in outline, oval or circular in shape, having a well marked smooth, continuous lining surrounded by vacuolated cells. In others, the space is lined by a zone of granular protoplasm staining fairly deeply with eosin and containing few, if any, nuclei. Faint lines demarcating the outlines of cells are seen in some parts of this zone.

Within certain of these spaces a large collection of amorphous granular material is found staining deeply with eosin but varying in different parts in the intensity of its staining (Fig. 2). In this a degenerated cell or its nucleus is sometimes seen.

Such formations do not occur in all the islets, but on the other

hand, in some islets three of them are present. It is to be noted that no trace of such cells is found in any of the surrounding ovarian tissue.

II.

A. Clinical Report.

The second tumour was removed from a patient aged 31 years, who complained of irregular hœmorrhage, dysmenorrhœa, left-sided pain and leucorrhœa. She had four children. Puberty occurred at 15 years. Menstruation was normal up to three years before operation when she had a miscarriage. On examination the vaginal walls were lax, the cervix hypertrophied, the uterus retroflexed, the left ovary and both Fallopian tubes appeared normal, and the right ovary formed a hard tumour with smooth rounded prominences on its surface. Ascites was not present.

B. Pathological Report.

Macroscopical. The tumour measures $2 \times 1\frac{1}{4} \times 1\frac{1}{2}$ inches. The cut surface is of a yellowish white colour and of a granulated appearance. Minute gaping channels are seen in the substance of the tumour, especially near its centre. Microscopically, these prove to be thin-walled vessels. Around the tumour there is a thin capsule of condensed and fibrosed ovarian tissue, varying from $\frac{1}{16}$ to $\frac{5}{16}$ inch in thickness, and narrowest in the dependent part of the tumour. At one pole an old corpus luteum is present.

Microscopical. The tumour shows the structure of a fibromyoma, except that incorporated in the tumour are large numbers of epithelioid cell-clusters resembling those found in the previous specimen. In parts the connective tissue stroma of the tumour resembles that of the ovary (Fig. 1). Hyaline degeneration is present in places, but no calcareous degeneration is found. Most of the epithelioid cell-clusters are surrounded by a zone of flattened or spindle shaped fibrous tissue cells. A few clusters are, however, not so encapsulated. They vary in size and shape (see Fig. 1), some being small and circular, resembling in a way ripening Graafian follicles, and others being large, irregular in outline and partially subdivided by invaginations of the surrounding connective tissue capsule. In places the epithelium appears to have ruptured through the capsule and to be displacing the surrounding connective tissue, and in some of these the suspicion is raised that an actual infiltration is occurring. No mitotic figures, however, are seen in the nuclei. The epithelioid cells resemble in structure and arrangement those already described in the first tumour. Some of the cells are, however, more active in appearance. The same radial arrangement, or tendency to form columns is present (Fig. 4). The cells lying next

the connective tissue are not more cylindrical in form than those of the remainder of the cluster. In some of the clusters there is a large faintly staining cell of average diameter 140 μ, in which an oval nucleus measuring about 50 μ × 75 μ lies excentrically. It is fairly rich in chromatin. These are the so-called ova-like cells, and will be discussed later.

In other clusters a large circular body is found varying in diameter between 120 μ and 400 μ and surrounded by a distinct cell membrane. The structure of these formations varies. In some the protoplasm forms a distinct rim about 18 μ wide surrounding a space. In others this zone, which stains fairly deeply with eosin, is free from nuclei, and is limited on its inner border by a distinct membrane, but the zone shows no radial striation. In a third type, this zone contains one or more nuclei not very rich in chromatin, but often shows signs of degeneration. In yet others, the protoplasm is gathered into a granular, faintly staining mass about 90 μ in diameter, placed centrally or excentrically within the vacuole. In this mass, one or more oval nuclei are found. These are poor in chromatin. In some cases, the central mass can be seen to be composed of more than one degenerated cell, the outlines of which are still visible.

Although many of the epithelioid cells adjacent to these large circular bodies approximate in form to columnar cells, they do not form a regular layer. These surrounding cells in many instances show marked vacuolation.

In some of the epithelioid cell-clusters, vacuolation is not a marked feature. In others, it is increasingly so towards the centre of the cluster (Fig. 4).

In the portions of the surrounding ovarian tissue included in the sections, very few primordial follicles are seen. Although not present in the tumour, interstitial hæmorrhages are present in the ovarian stroma. No epithelioid cells, such as are present in the neoplasm, are found in the portions of ovarian tissue included in the sections.

III.

A. Clinical Report.

The third tumour was removed from a patient aged 59 years, who was complaining of a bearing-down sensation, and of having had, two months before, a bloodstained discharge of a week's duration. Puberty occurred at 16 years. She had three children and had had one miscarriage. Her last confinement was 15 years before. The menopause occurred nine years before admission, and until that time menstruation had been regular in type and lasted

seven days. On examination, nothing abnormal was found in the uterus or Fallopian tubes. The left ovary was small and sclerosed. The right ovary consisted of a hard tumour, whitish in colour. Ascites was not present.

B. Pathological Report.

Macroscopical. The tumour is a solid nodular tumour of the ovary, measuring $3\frac{1}{2} \times 3\frac{3}{4} \times 2\frac{1}{2}$ inches. Small interstitial hæmorrhages are present under its surface. Minute channels are seen on its cut surface, which microscopically prove to be thin-walled vessels. A narrow compressed zone of ovarian tissue surrounds the tumour. A large remnant persists at the hilum.

Microscopical. The tumour shows the structure of a fibromyoma in which are scattered islets of vesicular epithelioid cells, resembling in structure and arrangement those described in the two previous records (Fig. 5). The stroma is cellular and largely composed of fibrous tissue. There is hyaline degeneration and calcareous degeneration is quite marked generally throughout the tumour. It corresponds in its distribution to the vicinity of the epithelioid cell-clusters. In some parts, it forms a ring-like deposit around a collection of degenerated cells.

Around the epithelioid masses there is no distinct condensation of the connective tissue. The masses are smaller on the average than those of the two previous tumours, large collections of them however, are present. These are made up of groups of adjacent smaller collections separated from one another by complete or incomplete connective tissue septa.

The cells composing the islets are not very active in appearance. In this specimen, round formations such as are described in the previous ones are found. They are few in number in the parts of the tumour examined. The epithelioid cells around them appear to be compressed, and do not form a regularly arranged layer.

Microscopically, the ovarian tissue surrounding the neoplasm is found to comprise both the medullary and the cortical layers. No primordial follicles nor Graafian follicles are found therein, but a corpus albicans is included in the sections prepared. It is noteworthy that no epithelioid cells, such as are present in the neoplasm, are found in the ovarian tissue examined.

Discussion.

The nature and origin of these tumours is not clear. All three are unilateral. None are associated with ascites. All three are encapsulated tumours. This condition is found commonly in fibromyomata of the ovary (Virchow,[4] Fairbairn,[5] Briggs and

Walker[6]); but these tumours cannot be regarded simply as fibromyomata, because of the inclusion of epithelioid cell-clusters. We have now to consider what evidence we have as to the origin of these epithelioid cells.

There are various possibilities.

1. Extrinsic.
2. Intrinsic. A. from the granulosa cells.
   B. from the medullary cords.
   C. from the superficial ovarian epithelium.
   D. from the rete ovarii.
   E. from the theca interna.

1. Extrinsic. The epithelioid cell-clusters might be metastases from a carcinoma situated outside the ovary. This, however, seems unlikely, as no such epithelioid cell clusters are seen in the surrounding ovarian tissue. According to Bland Sutton,[7] the common situations for cancer liable to infect the ovary are the gastro-intestinal tract, especially the pelvic colon, the gall bladder, breast, uterus and Fallopian tube. No evidence of the presence of carcinoma in any situation was present at the time of the operation. The fact that all three patients are well after 17, 14, and 11 months respectively, and show no signs of other metastases is against the tumour being secondary to a malignant condition outside the ovary.

2. Intrinsic. The epithelioid cells do not resemble in structure, or arrangement, any tissue normally present in the ovary.

A. The outline of the cells is more distinct than that of the Graafian follicle cells (Figs. 2, 3, 4 and 5). The cell body is larger, and has less affinity for eosin than has the cell of the membrana granulosa.

In all these tumours, the epithelioid cells abutting on the connective tissue are not cylindrical or cubical in form (Fig. 3), nor are their nuclei placed peripherally in the cells. In this respect, my tumours differ from the formations found in tumours of the ovary by v. Mengerhausen,[8] v. Kahlden,[9] Gottschalk,[10], Lönnberg,[27] Schröder,[28] Liepmann,[29] Werdts,[30] Ulesko-Stroganowa,[1] Neumann,[2] Tesauro,[3] and others, and considered by them to have arisen from the follicular epithelium.

In none of the three tumours are the cells abutting on the larger so-called ova-like cells cubical in form, and arranged radially. In this respect they differ from those described and considered to be of follicular origin by v. Kahlden,[9] Schröder,[10] Lönnberg,[27] Liepmann,[29] and Aschner.[21]

In my tumours there is not seen around the epithelioid masses a thecal reaction such as described in tumours of granulosa origin by Meyer,[22] Neumann,[2] Masson and Martin,[20] and Tesauro.[3]

In each of my tumours, outstanding large cells are found within the epithelioid clusters. These I regard as degenerated cells (Figs. 2 and 3). So-called ova-like cells are described in various types of ovarian tumour by Pozzi and Beaussenat,[23] v. Mengerhausen,[8] v. Kahlden,[9] Amann,[25] Gottschalk,[10] Schröder,[28] Lönnberg,[27] Kretschmar,[24] Voigt,[26] Blau,[12] Brenner,[13] Eimer,[11] v. Werdt,[30] and Aschner.[21] In none of these has the nuclear formation characteristic of oögonia and oöcytes been demonstrated satisfactorily.

The "ova-like" cells of Liepmann,[29] Blau,[12] Schröder,[28] Voigt,[26] v. Kahlden,[9] Aschner,[21] Emanuel[14] and Gebhard,[15] appear to resemble those found in these three tumours in being degenerated cells.

B. Although the form and arrangement of the epithelioid cells does not point to their arising from the granulosa cells, it does not exclude their arising from persistent medullary cords. Tesauro[3] describes the characters of the tumours of this origin as follows: "Il s'agit ordinairement de néoplasies d'architecture solide et homogène, constituée par les grosses cellules à faciès sexuel du séminome originellement décrites dans l'ovaire par Masson et Chenot (1912). Exceptionellement on rencontre des malformations bénignes constituée de cordons génitaux adénomateux (1) (comme dans le cas de Masson, Chalier et Martin) ou de massifs sarcomatoides sertoliformes (Peyron)."

C. In no part of the tumours examined do the cells resemble in form and arrangement those of the superficial ovarian epithelium. Against the view that the cell-clusters arise from this epithelium is the fact that no such epithelioid cells are found in the portions of the surrounding ovarian tissue examined. No ingrowths from the superficial ovarian epithelium are seen in any of the tumours.

D. Against the origin being from the *rete ovarii* is the fact that in the first and third specimens the hilum of the ovary is definitely not involved in the tumour formation. The characteristics of the tumour, also, do not resemble those summarized by Corsy and Montpellier,[19] as follows: "Les tumours wolffiennes se distinguent de celles du revêtement ovarien, par la constance de leur *topographie vésiculaire initiale*, la régularité des lumières tubuliformes ou micro-kystiques, *l'absence presque absolue des petits cordons néoplasiques réticulés et infiltrants. Il est exceptionnel d'y observer la vacuolisation irrégulièrement confluente*, les formations syncytiales pédiculées, à noyaux multiples, ou les petits cordons *métathéliaux d'aspect surrénaliforme* qui sont au contraire si fréquents dans les néoplasmes directement issus du revêtement coelomique."

E. The epithelioid cells resemble somewhat the cells of the theca interna. Against their being of this origin is the absence of any fine intercellular meshwork, such as is seen in the theca interna. In the three tumours which he considered to have arisen from the theca interna of atretic follicules, Klemperer[17] demonstrated the presence of fat droplets between the cells. Tumours arising from the interstitial or theca cells would probably be associated with more marked endocrine disturbance than is present in these three cases. The majority of tumours associated with precocious sexual development in children are of the type of those arising from the intestitial or thecal cells. The epithelioid cells of my tumours resemble some present in Nicholson's tumour and depicted by Tesauro.[3] (Fig. 9).

The absence of any intercellular substance and the lack of connexion with the connective tissue are points in favour of the epithelioid cells being epithelial in nature. As the specimens were fixed in formalin 10 per cent, it was impossible to determine whether the cells contained glycogen, as did those described by Aubert.[18]

Against the possibility of these tumours being of sarcomatous nature is the very distinct outline of the cells in question (Figs. 4 and 5), the fact that their nuclei are not rich in chromatin, and the absence of mitosis. The non-development of metastasis in all three cases also points to their not being sarcomatous in nature.

The demonstration (Ewing) that one element of an ovarian teratoma may suppress the others raises the question, how far such apparently simple tumours of the ovary may prove to be of teratomatous origin. No malformation of the genital tract has been found in any of the three cases under consideration; but Freund considers that malformation has not been observed with sufficient frequency to indicate a definite connexion of such gross anomalies with a tendency to teratomatous growths.

The nature of these tumours remains obscure; but they are sufficiently distinctive in type to repay study. This description is offered in the hope that tumours of the same type but of more clearly defined origin may be found later.

I am very much indebted to Dr. Donald McIntyre for the clinical report and tumour of the first case, and to Dr. John T. West for those of the second and third. I am also grateful to Professor Cathcart and Professor Bryce for facilities afforded to me in preparing the illustrations of this report, and to the Carnegie Trustees for a grant towards their cost.

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Fig. 1. Portion of ovarian tumour (Specimen II) upper 4–5 cm. shows the remnant of ovarian tissue while the remainder has the general structure of a fibromyoma except that it is permeated by groups of epithelioid cells.

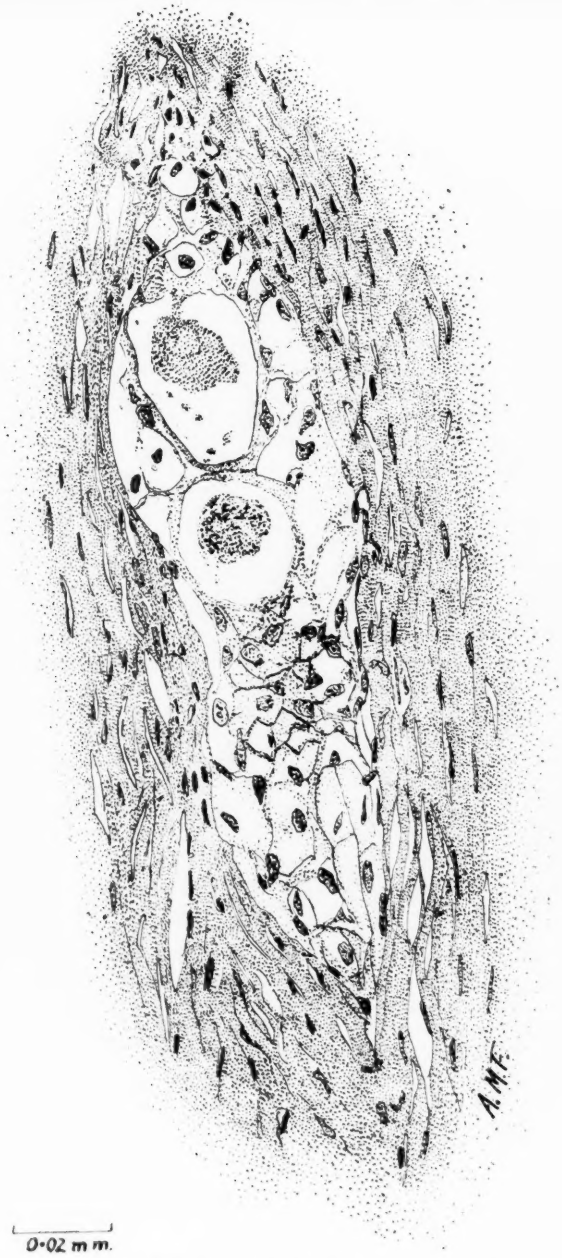

Fig. 2. Islet of polyhedral epithelioid cells surrounded by connective tissue. Specimen II). The distinct outline of the cells can be seen along with degeneration of the central cells. There is no thecal reactions of the surrounding tissue.

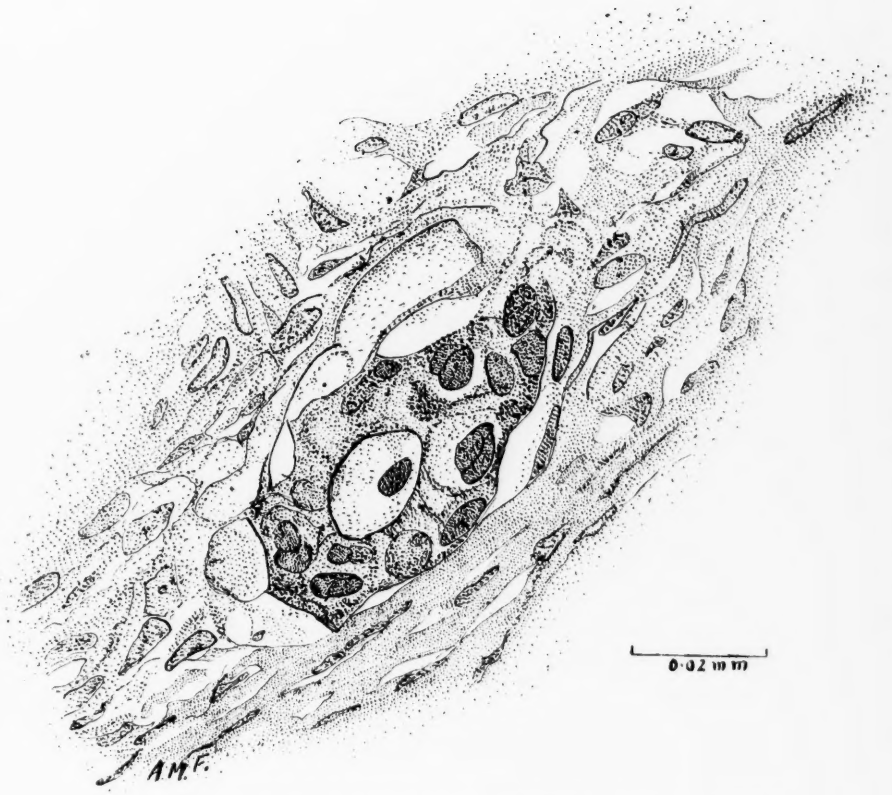

Fig. 3. Smaller cluster of epithelioid cells enclosing a large degenerated cell and surrounded by connective tissue (Specimen I).

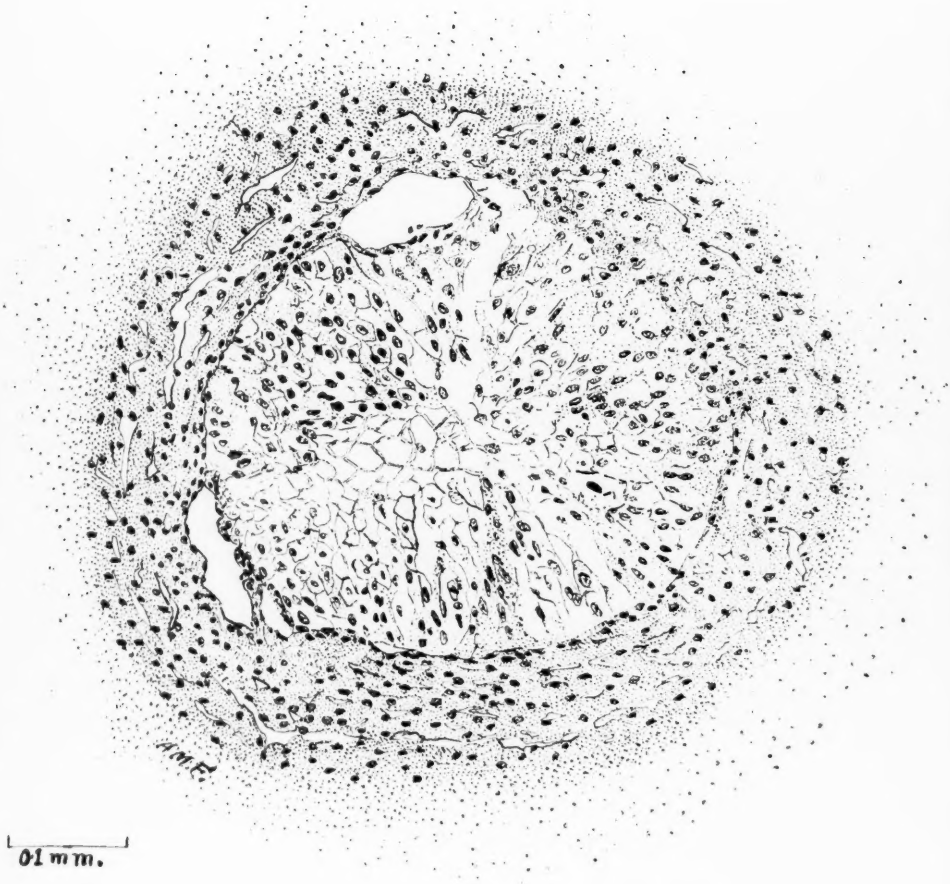

Fig. 4. Oval collection of epithelioid cells embedded in connective tissue. (Specimen II). A tendency for the epithelioid cells to form columns is seen. Vacuolation is increasingly marked towards the centre of the cluster. The surrounding cells do not resemble cells of the theca interna.

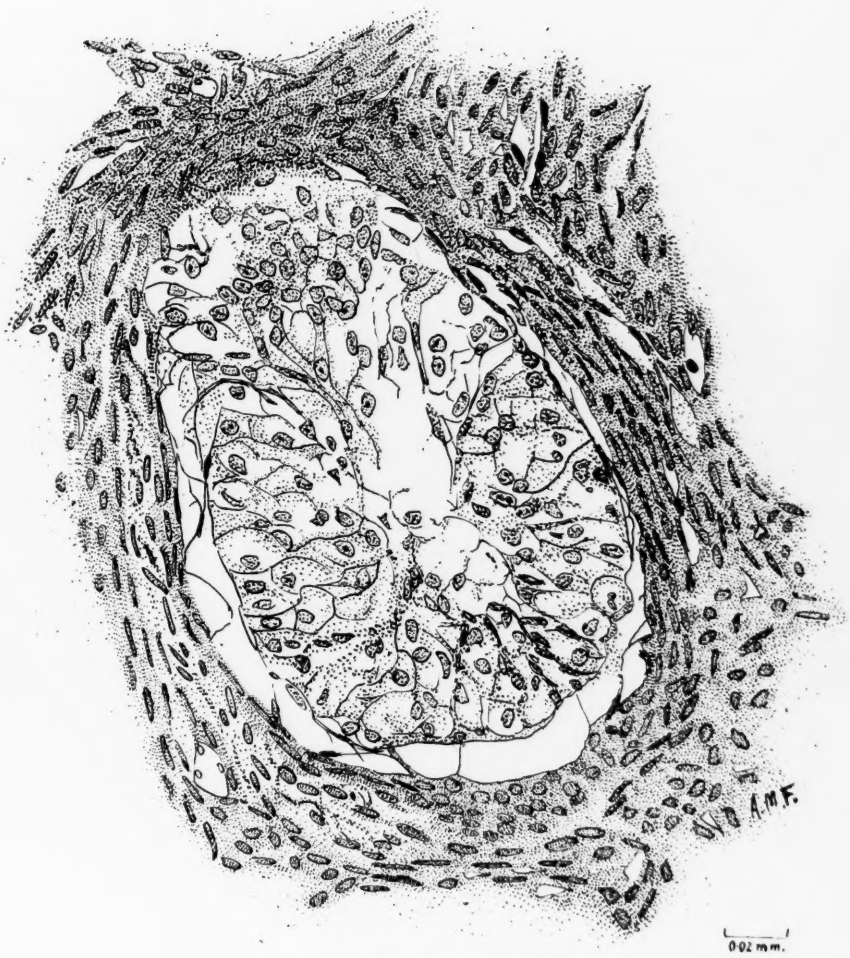

Fig. 5. Group of epithelioid cells surrounded by connective tissue. (Specimen III). The cell outlines are distinct. The cells lying next the connective tissue are not cylindrical in form and do not resemble in arrangement those of the membrana granulosa.

Two Cases of Eclampsia developing without Albuminuria, and one fatal case of Hydatidiform Mole without Albuminuria.

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This paper reports two cases of eclampsia and one of hydatidiform mole associated with fatal toxæmia. The two cases of eclampsia are of unique interest as they occurred in women who were under close observation in the ante-natal ward of the Siriraj Hospital, the one for over three and the other for over four weeks. The diet they received in hospital consisted of unpolished red rice, cooked vegetables and salted fish. Pork was given about once a week.

The urine was examined every day and in neither case was any abnormal constituent ever found before the onset of the convulsions. The amount of urine passed in the 24 hours was measured, and in the first case (Nang Cham) the amount did lessen to between 500 and 600 c.c. in a day during the week before the eclampsia developed. It is, however, almost certain that the amount of urine passed exceeded the amount recorded by a considerable margin, as the patient was quite well and had the freedom of the wards. In her case the blood pressure was consistently high, but dropped to within normal limits before she left hospital. She was shown about a week after her admission, at the hospital Clinical Society, and a diagnosis of angio-neurotic œdema was suggested. The œdema of her back and upper extremities was extreme when she was admitted, but had disappeared before she was presented for diagnosis. I expressed the opinion that she might develop eclampsia, but never felt that there was any justification for terminating the pregnancy.

The second case (Nang Kim), gave no warning whatsoever of the onset of the disease. The Table (3) does show that the blood-pressure had increased slightly during her stay in hospital. She had a definitely contracted pelvis. Her urinary secretion was very free, and until after the 19th fit contained no abnormal substance. After the convulsions ceased her urine soon became normal, but the

power of her kidneys to eliminate indigo-carmine was markedly impaired. Both placentæ appeared to be normal.

Eclampsia without albuminuria is uncommon, but has been reported by Collins, Charpentier, Ingerslev and possibly by others, but I have not been able to find any reference to such cases after 1883. It is possible that a certain number of these early cases should have been called uræmia, (I have nowhere seen a full clinical account of the onset of eclampsia in an apparently healthy patient kept under close observation.)

The case of hydatidiform mole was admitted in a very grave condition and died the day after the mole was evacuated. At no time was albumin found in her urine, but sections of her kidneys show a very marked cloudy swelling of the tubules, the glomeruli not being much affected. The blood urea rose from 42 mgm. to 57 mgm. in 100 c.c. of blood.

Nang Cham, ii-para, aged 25, was admitted to the maternity department of the Siriraj Hospital on the 12th December, 1927, complaining of swelling of the face, chest and both arms, also of a dull pain in the back.

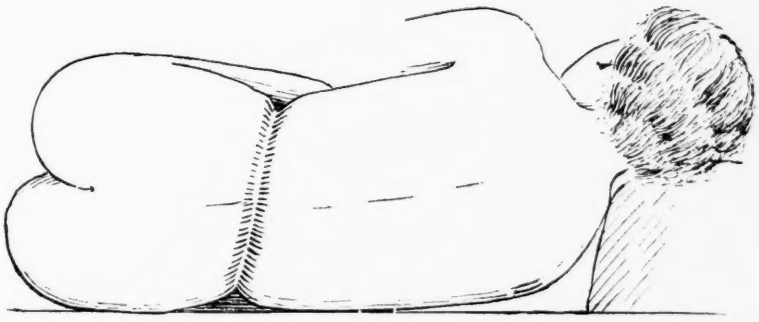
Menstrual History. Her monthly periods commenced when she was 16 years old, occurred every 28 days and lasted for five days. She usually had pain in the lower part of the back before the flow commenced and frequently noticed clots. Slight bleeding from the gums sometimes occurred during menstruation.

Family History. Nil ad rem.

Personal History. Nil ad rem.

History of previous pregnancy. She married when she was 17 years old. During the last month of her first pregnancy she noticed a swelling of both legs from the knee downwards. This swelling occurred on three separate occasions and lasted each time for about a week. In the intervals her legs were quite normal. She had neither fever nor any abnormal symptoms. The baby was born in May 1926, and died when it was one month old (? from hæmaturia).

History of present pregnancy. She has had nausea and vertigo every morning since the second month of pregnancy. During November, 1927, she noticed a swelling of her face, chest, neck and arms which lasted for a few days and then disappeared. This swelling pitted on pressure. Four days before her admission to hospital she again noticed a swelling involving the same areas and associated with pain in her back and in both elbow joints. The swelling affected the parts in the following order: 1. left arm; 2. left fore-arm; 3. chest; 4. back; 5. neck; 6. right arm.



NANG CHAM. This sketch shews the extraordinary constriction band in the œdematous back. The band and the œdema disappeared entirely within a week after her admission.

Condition on admission. The patient looks well although somewhat anæmic. She wears an anxious expression on her countenance. There is marked œdema of the upper extremities and back and to a less degree of the chest and abdomen. There is no appreciable œdema of the face or lower extremities. There is a deep groove running across the back from just above the crest of one ilium to the corresponding position above that of the other, which marks the lower boundary of the pronounced œdema of the back. It is clearly indicated in the accompanying sketch.

Physical examination. Head, face, eyes, mouth and neck are apparently normal.

Chest.

Lungs. Nothing abnormal discovered.

Heart. The apex beat is in the 4th interspace 9 cm. from the mid-sternal line. Nothing abnormal can be discovered.

Pulse. Rate 80, regular, full, good tension.

Abdomen. The abdomen gives the appearance of a 34 weeks' pregnancy. The position of the child is a left occipito-anterior. Fœtal heart sounds were heard.

Pelvic measurements. Inter-spinous 24 cm., inter-cristal 25 cm., external conjugate 16½ cm.

Nervous system. Apparently normal.

Urine. No albumin, no acetone, no sugar, no pus, and no casts.

Blood count. Red blood corpuscles 3,180,000, white blood corpuscles 10,200, hæmoglobin 55 per cent.

Wassermann reaction. Negative.

Fæces. No parasites or their ova were discovered.

Treatment. Rest in bed, free purgation, water diet and large doses of glucose.

Further notes.

13.12.1927. The worried expression persists. There is a slight protrusion of both eyes. She takes and passes water freely.

14.12.1927. There is slight bleeding from the lower gum caused by a scratch from her tooth-brush. Adrenaline was applied to the gum and calcium lactate was ordered in 10 grain doses three times in the day.

15.12.1927. The bleeding from the gum persists.

20.12.1927. All œdema has disappeared. The measurement round the arm taken just above the elbow joint now measures 20 cm., or 4½ cm. less than when she was admitted. The groove in the back has disappeared. The patient has little inclination

for food. At no time has albumin or any other abnormal substance been discovered in the urine. The urinary secretion is free.

23-31.12.1927. Patient appears quite well and sleeps well. She still has a worried expression and is not passing quite so much urine. (500-600 c.c. in the 24 hours.) The fœtal heart sounds are heard.

26.12.1927. A water elimination test was carried out. At 0730 hours 500 c.c. of water were given with the following result.

Time.	Amount of urine passed.
0800 hours.	170 c.c.
0830 ,,	200 c.c.
0900 ,,	100 c.c.
1000 ,,	45 c.c.
Total	515 c.c.

370 c.c. were passed in the first hour, and 515 c.c. in two and a half hours.

1.1.1928. The blood-pressure is slightly raised to-day, systolic 155, diastolic 95 m.m. of mercury.

2.1.1928. Eats and sleeps well. Blood pressure: systolic 170, diastolic 100 m.m. of mercury.

At about 2200 hours patient felt uneasy and complained of abdominal pain, a sense of oppression in the chest, and a headache especially in the temporal regions. She could not sleep. The urine contains no albumin.

3.1.1928. The symptoms lasted through the night. The abdominal pain is severe.

At 0840 hours. The patient vomited 100 c.c. of a yellowish fluid.

At 0900 hours. A fit occurred which lasted for 20 seconds and was followed by coma which lasted for 30 minutes.

Blood pressure: systolic 175, diastolic 115, pulse-rate 104, urine albumin + +.

At 0955 hours. A second fit occurred which lasted for 20 seconds and was followed by coma lasting for one and a half hours.

At 1159 hours. A third fit occurred, lasted for 20 seconds and was followed by coma lasting for two hours.

TREATMENT.

Morphine sulphate gr. $\frac{1}{2}$ and scopolamine hydrobromide gr. $\frac{1}{150}$

Veratrone $\frac{1}{2}$ c.c. on two occasions.

Calomel gr. 5.

Mist. sennæ co. 12 ounces. (In three doses).

Glucose solution 6 per cent, 150 c.c.

Water 110 c.c.

4.1.1928. The patient is drowsy. Her vision is impaired. She complains of a headache. No fœtal heart sounds can be heard. She passes fæces at frequent intervals.

The urine contains albumin.

TREATMENT.

Veratrone ½ c.c.
Mist. sennæ co. 12 ounces. (In three doses).
Solution of magnesium sulphate. 4 ounces. (In two doses.)
Glucose solution 120 c.c.
Water 1450 c.c.

5.1.1928. The patient is still drowsy, but all her symptoms have improved. Glucose solution 600 c.c., water 3,000 c.c.

6.1.1928. The patient complains of no symptoms. The urine contains a trace of albumin.

7.1.1928. The patient is very much better. Temperature 97.8°F., pulse-rate 68, blood-pressure 155 : 105. The urine does not contain any albumin.

At 1130 hours. Induction of labour.

A rubber stomach tube, 30 inches long, was introduced into the uterus. an anæsthetic was not given. Three doses of 10 gr. of quinine bi-hydrochloride were given at intervals of four hours.

At 1180 hours. The pains commenced.

8.1.1928. At 0200 hours the membranes ruptured. At 0430 hours a macerated female child weighing 2000 grammes was born 17 hours after the tube was inserted.

A trace of albumin was occasionally found in the urine between the 8th and 20th of January. A very few granular and hyaline casts were found on one occasion only. (11th January, 1928).

Between the 13th and the 19th of January there was a certain amount of abdominal fullness and pain associated with an elevated temperature. The highest temperature recorded was 103°F, and on two occasions only did it exceed 102°F. The pulse and respiration rates remained almost normal, and the case was suggestive of a mild form of paratyphoid fever.

31.1.1928. Water elimination test. At 0700 hours 500 c.c. of water were given.

Time.	Amount of urine passed.
0830 hours.	350 c.c.
0930 ,,	150 c.c.
1040 ,,	150 c.c.
Total	650 c.c.

The systolic blood pressure dropped to between 110 and 115 m.m. of mercury, and remained at that level during the rest of her stay in hospital.

She was discharged well on the 4th February, 1928.

ECLAMPSIA.

TABLE I.

Table showing Blood Pressure in millimetres of mercury taken in the recumbent position in bed at about 1,000 hours

Date	Systolic	Diastolic	
Dec. 1927.			
13th	145	85	
14th	140	90	
15th	140	80	
16th	168	100	
17th	160	80	
18th	125	80	
19th	150	85	
20th	140	80	All œdema has disappeared.
21st	130	85	
23rd	130	80	
24th	150	100	
26th	120	68	
28th	125	75	
Jan. 1928.			
1st	155	95	
2nd	170	100	
3rd	175	115	Eclampsia.
4th	130	85	
5th	120	80	
6th	130	95	
7th	...	...	Induction of labour.
8th	130	95	
11th	122	75	
14th	110	60	
DURING LABOUR.			
1st Stage :			
during pain	165	110	
between pains	150	105	
2nd Stage :			
during pain	190	120	
between pains	170	110	
3rd Stage :	140	90	

Nang Kim, a primigravida, aged 19, was admitted to the maternity department of the Siriraj Hospital on the 17th July, 1928, as she thought she was in labour.

Menstrual history. Her monthly periods commenced when she was 13 years old, occurred every 28 days and lasted from three to four days. She usually has some pain in the lower part of her back during menstruation which last occurred in the middle of November, 1927.

Family history. *Nil ad rem.*

Personal history. *Nil ad rem.*

History of pregnancy. She had morning sickness for five days during the second month of pregnancy, but had no other abnormal symptoms.

Condition on admission. Patient is a small woman 5 feet $4\frac{1}{2}$ inches. She looks perfectly healthy.

Physical examination. Her alimentary, circulatory and nervous systems are apparently normal.

Abdomen. The abdomen presents the appearance of a 36 weeks pregnancy. The position of the child is right sacro-anterior. The breech is gripped by the lower uterine segment but is not engaged.

Pelvic measurements. Inter-spinous 21 cm., inter-crystal 22 cm., external conjugate $16\frac{1}{2}$ cm.

Urine. The urine does not contain any abnormal substances.

Fæces. Ascaris, trichiuris and tænia hymenolopsis nana.

25.7.1928. External version unler light anæsthesia was performed. The second breech was converted into a left occipito anterior position.

12.8.1928. The fœtal head is engaged.

18.8.1928. The patient complains of vertigo and slight dimness of vision. She has not any headache, pain or œdema. The urine is apparently normal. Blood pressure 126:80 m.m. of mercury.

19.8.1928. Her face looks puffy and her legs are swollen from her ankles to her knees. Pulse rate 82, respiration rate 22, blood-pressure 130:100, urine apparently quite normal.

20.8.1928 at 0715 hours. A fit preceded by twitching of the muscles of the face occurred and lasted for one minute. The fit was followed by coma which lasted for one hour. Her left pupil is larger than her right. The knee jerks are exaggerated.

21.8.1928 at 0200 hours. *Per rectum*, the cervix was found to be three fingers dilated. A catheter was passed and 400 c.c. of urine were drawn off. The urine contained neither albumin nor any other abnormal substance. No casts were found in smears made from a centrifugalized deposit.

At 0200 hours. The pulse-rate becare very irregular and rapid (see Table).

At 0700 hours. The forceps was applied under light ether anæsthesia. The head was lying with the occiput behind and to the right. A female child weighing 2,700 gm. (5.62 pounds), was delivered alive but died after 20 hours.

During the whole illness there was a very free secretion of urine. After the 19th fit, i.e. nearly 24 hours after the first convulsion, a slight trace of albumin and a few coarsely granular casts were found in the urine. Six fits occurred after the birth of the child. The coma lasted for 48 hours, but was not always so deep as to prevent the patient from being aroused to swallow fluids.

28.8.1928. The patient complains of blurred vision. Her mental condition is dull. Fouchet's test negative. Ehrlich's aldehyde test (for urobilin and urobilinogen in the urine) negative. There is no albumin in the urine.

29.8.1928. The patient appears to be quite well and her vision is normal.

The blood was examined for urea, non-protein nitrogen, creatinin and calcium and these substances were found in the following amounts in 100 ccs of blood.

	Urea.	N.P.N.	Creatinin.	Calcium.
19.8.1928.	25 mgm.	32.7 mgm.	1.15 mgm.	8.8 mgm.
20.8.1928. (after delivery)	33 –	40.3	1.5	
7.9.1928.	22	29.3	0.9	

6.9.1929. Water elimination test. At 0700 hours ? 500 c.c. of water were given :

	Amount of urine passed.
At the end of the 2nd ½ hour.	200 c.c.
do do do 3rd ½ hour	100 c.c.
do do do 4th ½ hour.	350 c.c.
do do do 5th hour.	125 c.c.
Total	775 c.c. in three hours.

At 1100 hours. *Chromocystoscopy.* The bladder and ureteric orifices appeared normal. Five c.c. of 0.9 solution of indigo-carmine were injected into the right median basilic vein. None of the dye was excreted within 15 minutes from the time it was injected, when the cystoscope was withdrawn. The urine subsequently passed was of a pale blue colour.

Conclusion. The power of the kidneys to excrete indigo-carmine was definitely impaired.

The temperature rose to 101.6°F on the third and 100°F on the sixth evenings, but the puerperium was otherwise normal.

The two following observations are of interest:—1. Among the duties the students have to perform daily in the ante-natal ward is to measure the circumference of the abdomen at the levels of the ensiform cartilage and the umbilicus and the distance of the umbilicus from the ensiform cartilage and the symphysis pubis respectively. These measurements had remained practically constant for this patient for 16 days.

On the morning of the 19th of August the following changes were noted: (It will be remembered that the head was engaged on the 12th of August.)

The distance from the symphysis pubis to the umbilicus was increased by $2\frac{1}{2}$ cm. while that from the umbilicus to the ensiform cartilage was decreased by $1\frac{1}{2}$ cm. The circumference of the abdomen at the level of the umbilicus was increased by 5 cm., and at the level of the ensiform cartilage by 3cm.

2. Several attempts were made on the 20th of August to perform a lumbar puncture. There appeared to be little or no cerebro-spinal fluid and only a few blood-stained drops could be obtained.

Baby. Post mortem findings.

Lungs atelectatic and congested. Spleen, liver and kidneys congested.

Microscopic examination.

Lungs. Atelectatic and congested.

Spleen. Congested.

Liver. Congested. Section shows fatty infiltration and blood formation.

Kidneys. Both organs show congestion.

28.6.1928. Nang Kim presented herself for examination. She has been quite well since she left hospital.

Urine. Her urine does not contain any albumin. A centrifugalized deposit showed many oxalate crystals, a very few bladder epithelial cells, but no casts and no blood cells.

Chromocystosocopy. 5 c.c. of indigo-carmine were injected into the right median basilic vein. The dye appeared from both ureters after six minutes. The patient had not anything to drink for some hours, so this result is fairly normal. She refused to stay in hospital.

Blood count. Red blood corpuscles 3,490,000, white blood corpuscles, 9200, hæmoglobin 62 per cent.

ECLAMPSIA.

TABLE II.

Admitted 17th July 1928. Discharged 7th September 1928.

Table showing number and times of fits, blood pressure and treatment during the eclampsia, 19th August, 1928.

Time	Number and duration of fits	Time	Blood pressure in millimetres of Mercury Systolic	Diastolic	Medicaments	Remarks
					0800 hrs. Morphine gr. ¼ Veratrone ½ c.c	
19th August, 1928.						
0715 hrs.	(1) 1 min.					
0730 ,,	(2) 1 ,,	0800 hrs.	135	85		
0815 ,,	(3) 1 ,,					
0901 ,,	(4) 1¼ ,,	0905 ,,	115	80	0940 hrs. Morphine gr. ¼ Hyoscine gr. 1/150	1120 hrs. P.R. Cervix 3 fingers dilated.
1203 ,,	(5) 1 ,,	1120 ,,	100	86		
1330 ,,	(6) 2 ,,	1302 ,,	130	86	1450 hrs. Calcium Chloride gr. 1 intramuscularly.	1200 hrs. Passed faeces, followed by fit.
1505 ,,	(7) 2 ,,	1507 ,,	170	120		
1033 ,,	(8) 2 ,,	1510 ,,	130	80		
1851 ,,	(9) 2 ,,					2130 hrs. Catheter passed. Urine 400 c.c., 0 Albumin, 0 Sugar, 0 Acetone P.R. Cervix 3 fingers dilated.
2217 ,,	(10) 1½ ,,	2315 ,,	150	105		
2350 ,,	(11) 1½ ,,					
20th August, 1929						
0057 ,,	(12) ——					0100 hrs. Fœtal heart 160. Pulse 138. Respiration 35. 0200 hrs. P.V. Cervix fully dilated. Pulse between 150 and 160. Irregular in force and rhythm.
0117 ,,	(13) ——	0235 ,,	144	102		
0250 ,,	(14) ——	0300 ,,	162	112		
0305 ,,	(15) 1 min.	0355 ,,	136	98	0325 hrs. Veratrone ½ c.c.	0300 hrs. Catheter passed. Urine normal. Pulse 127.
0429 ,,	(16) 1 ,,					
0535 ,,	(17) 1 ,,	0520 ,,	140	120		0600 hrs. Pulse 130, irregular. Temp.
0557 ,,	(18) 1 ,,					0645 hrs. Catheter passed. Urine contained faint trace of albumin and a few casts.
0645 ,,	(19) 1 ,,					
0705 ,,	(20) 1 ,,					The forceps applied under light ether anæsthesia. Baby born 0714 hrs.
0847 ,,	(21) 1½ ,,					
0920 ,,	(22) 2 ,,	0954 ,,	150	120	0925 hrs. Veratrone ½ c.c.	
1015 ,,	(23) 2 ,,	1018 ,,	140	110		Passed faeces during fit.
1020 ,,	(24) 2 ,,	1020 ,,	160	115	1030 hrs.	
1242 ,,	(25) 1 ,,	1155 ,,	130	95	Morphine gr. ¼ Hyoscine gr. 1/150	1400 hrs. Intravenous saline 500 c.c.
1515 ,,	(26) 1 ,,					

P.R. = Per Rectum. P.V. = Per Vaginam.

ECLAMPSIA.

TABLE III.

Table showing Blood Pressure in millimetres of mercury. Readings taken with the patient in bed in the recumbent position at about 1,000 hours.

Date July 1928.	Systolic	Diastolic
17th	113	80
18th	105	73
19th	108	75
21st	106	73
23rd	110	75
25th	108	70
26th	104	70
28th	106	70
30th	108	73
August 1928.		
1st	112	75
3rd	110	73
4th	115	75
6th	108	73
8th	115	75
10th	130	95
12th	120	70
14th	122	71
15th	128	75
16th	130	80
18th	126	80
AFTER DELIVERY.		
Sept. 1928.		
2nd	120	80
4th	114	74
5th	120	80
6th	114	72

Nang Mook, aged 19 years, was admitted to the maternity ward on the 9th of March, 1929, complaining of excessive vomiting, constipation and abdominal pain.

Menstrual history. Her periods commenced when she was 14 years old, occurred every 28 days and lasted from three to five days. She sometimes passed clots, and sometimes had pain. She last menstruated about 12 weeks before she came to hospital, and about three months after her marriage.

History of present illness. About 15 days before her admission she lost all desire for food and commenced to vomit excessively. These symptoms have become worse. About six days before her admission she experienced pain in the "tumour" in her abdomen which has rapidly increased in size. The pain has become much worse and is referred to the lower part of her back.

Condition on admission. The patient looks very ill and is barely able to walk a few paces. There is no œdema in any part of her body. Pulse rate 124, respiration rate 24, temperature 99.3°F.

Physical examination. Alimentary system. She has several septic teeth. Her tongue is covered with a brown fur. She is very constipated, feels nauseated and vomits frequently, and complains of a burning sensation in her mouth and throat.

Chest.

Heart. The heart beats are very weak in character. A soft systolic murmur is heard over the pulmonary area.

Lungs. Nothing abnormal discovered.

Nervous system. Nothing abnormal discovered.

Abdomen. The uterus reaches to the level of the umbilicus. It is tender and painful, and is usually in a state of tetany.

Urine. The urine is scanty in amount and is high coloured. It contains a few granular and hyaline casts and a few pus cells, but no albumin and neither bile nor acetone. Blood-pressure, measured in mm. of mercury, systolic 106, diastolic 65.

Fæces. Ascaris and Trichiuris present.

12.3.1929. Blood urea, 42 mgm. in 100 c.c. of blood.

Treatment. Purgation, water and glucose.

At 0800 hours. There was a moderate hæmorrhage *per vaginam.*

At 0835 hours. *Per vaginam.* The cervix is soft and the external os admits the tip of a finger. Some vesicles of a hydatidiform mole were seen. The vagina was plugged with iodoform gauze by my assistant.

The urine contained neither albumin nor acetone nor bile. A large number of red blood corpuscles were seen in a smear from a centrifuged specimen.

Treatment. Caffeine .25 gm. (2 c.c.) morphine sulphate $\frac{1}{4}$ gr., sub-mammary saline 750 c.c. The gauze was removed at 1000 hours and there was no further bleeding.

13.3.1929. The patient is gravely ill. She vomits excessively and complains of severe pain in her back and flanks. Her pulse rate is rapid and its tension weak (130), respiration rate 26—32.

At 1150 hours. Ether anæsthesia. The vagina was plugged with cotton wool. (No laminaria tents were available). Sub-mammary saline 500 c.c. rectal saline, glucose and peptonized milk eight ounces every four hours.

At 200 hours. Pulse rate 142, respiration rate 28, temperature 102°F. Spinal anæsthesia, stovain 1.5 c.c. between the fourth

and fifth lumbar vertebræ. The cervix, softened by the plug, was easily dilated with Hegar's dilators until it would admit two fingers. The mole was then separated with the fingers and expressed and a hot uterine douche was given. The stomach was washed out with a solution of sodium bicarbonate, and submammary saline 700 c.c., morphine sulphate $\frac{1}{4}$ gr., and scopolamine hydrobromide $^1/_{150}$ gr. were given.

14.3.1929. The patient has been very restless and has not had any sleep. She is very weak and delirious. The pulse is impalpable.

At 1100 hours. 50 c.c. of a 3 per cent solution of sodium bicarbonate were given intravenously (This was given without my knowledge), morphine sulphate $\frac{1}{4}$ gr.

At 1430 hours. Died.

Post-mortem. March 15th 1100 hours.

Heart. The heart is soft and flabby and the myocardium has a dull appearance. It weighs 205 gr. The endocardium and valves appear to be normal.

Spleen. The spleen is rather small and only weighs 25 grm. The trabeculæ are prominent.

Liver. The liver weighs 1075 grm. On section it shows a uniform lobulation, but the lobules appear somewhat atrophic.

Kidneys. The right kidney weighs 105 grm. and the left 125. Both capsules were very loose and "fell" off. The cortices are swollen and opaque. The medullary striation is regular.

Uterus. The uterus is large and soft. The endometrium is yellowish grey in colour, opaque and covered with ragged grey tissue. The uterine muscle is soft and pale.

Ovaries. The ovaries contain small cysts. A corpus luteum is present. The left ovarian vein is thrombosed.

All the other organs and structures examined appeared normal.

Microscopical examination. The kidneys were the only organs to show any definite changes. Both organs showed marked cloudy swelling especially affecting the convuluted tubules and the loops of Henle. A few glomeruli were destroyed by hæmorrhage, but most of them appeared normal. Hæmorrhages are also seen between the collecting tubules.

Conclusions.

1. Eclampsia may, at very rare intervals, develop without warning in patients kept under the closest supervision.

2. The underlying cause or causes of eclampsia would appear,

especially in the first case, to have been at work several weeks before the onset of the disease, as evidenced by the œdema and high blood pressure.

3. It seems clear that no form of nephritis was responsible for the onset of the disease in any of the three cases.

4. It is equally clear that the kidneys were damaged in all three cases by the toxæmia.

5. Severe and acute changes can occur in the kidneys without albuminuria.

6. Although unsuitable diet and constipation are undoubtedly predisposing factors in the vast majority of cases of eclampsia in Europe and America, it is evident that the convulsions may develop even though the patient be kept on a simple diet and have her bowels well regulated.

7. The fact that the first patient occasionally bled from her gums during menstruation, and had a troublesome bleeding from her gums shortly before the eclampsia developed, is interesting and suggestive.

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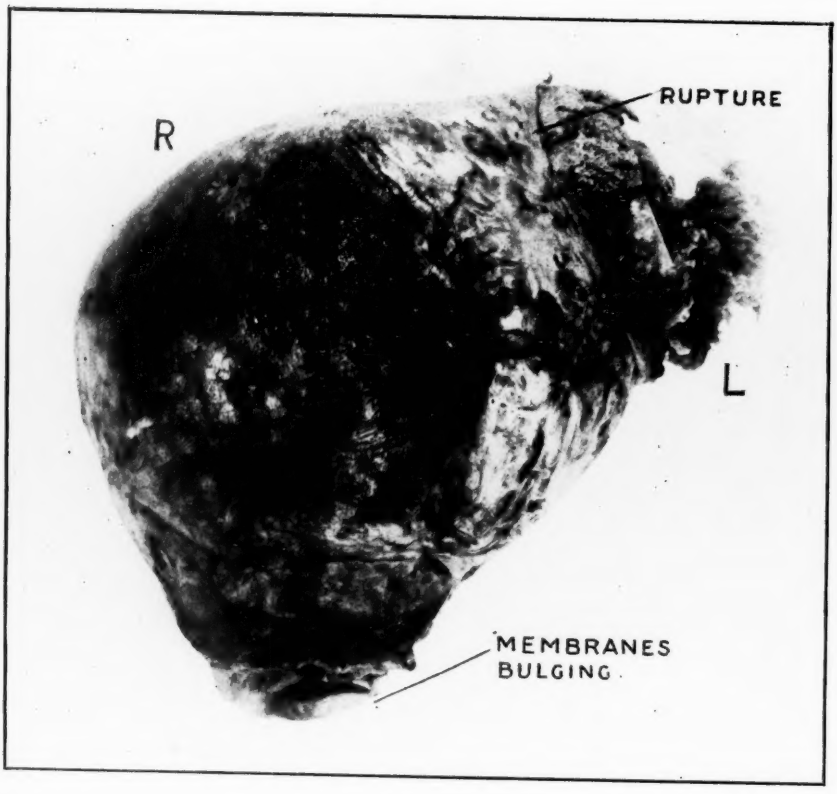
2. *Charpentier, "Eclampsie sans albuminurie. Traité pratique des accouchements." Paris, 1883, 1, 699.
3. *Ingerslev, "Beitrag zur Albuminurie wahrend der Schwangerschaft, der Geburt und der Eklampsie." *Zeitschrift f. Geb. u. Gyn.*, 1881, 6, 171-212.

*These references are taken from "Obstetrics," by Whitridge Williams



Spontaneous Rupture of the Uterus in Pregnancy.

Spontaneous Rupture of the Uterus during Pregnancy.*

By JOHN WEBSTER BRIDE, M.D., B.S. (London), M.D., Ch.B. (Manch.).

Lecturer in Obstetrics and Gynæcology, Manchester University; Honorary Surgeon for Women, Manchester Northern Hospital; Honorary Assistant Surgeon, The St. Mary's Hospitals, Manchester.

THIS case is of interest not only on account of the rarity of spontaneous rupture of the uterus in pregnancy, but also because of the early date at which the rupture took place, that is about the fourth month.

The patient was a woman aged 31 years, who had been married for four and a half years and was extremely anxious to have a child. Her doctor called me to see her in the early hours of April 17, 1928, and his diagnosis was ruptured ectopic pregnancy. The patient was collapsed, pale and anxious-looking, the pulse rate was 160 and the temperature 97° F., and she complained of right shoulder-tip pain. Her abdomen was rigid and slightly distended. On vaginal examination the uterus, which was the size of a normal four months pregnancy, could not be felt separate from any mass. The husband stated that the last menstrual period was on December 8th, 1927, and also that the first sign of trouble had been a sudden pain in the mid-hypogastrium at 1.30 p.m. on April 16, 1928, about twenty-four hours before I saw her.

There had not been any bleeding *per vaginam*. The abdomen was, as soon as possible, opened and the peritoneal cavity was found to be full of blood, due to a rupture of the uterus at the fundus on the left side remote from the cornu. Sub-total hysterectomy was performed and the patient, after a critical twenty-four hours, made a good recovery.

The specimen consists of the body of the uterus only, both Fallopian tubes and ovaries, being healthy were not removed. The uterus is the size of a four months' pregnancy and the rupture is situated behind and above the left cornu. The actual rupture measures $3\frac{1}{2} \times 2$ inches, and has occurred over the placental site,

*A specimen shown at the Manchester Meeting of the North of England Obstetrical and Gynæcological Society, January, 1929.

and pieces of placenta are protruding through it. At the lower pole the unruptured membranes are seen protruding through the site of amputation at the level of the isthmus, and at that region the uterine wall is $\frac{1}{16}$ inch thick, whereas in the neighbourhood of the rupture it is about half that thickness. At the time of removal the whole uterus was semi-transparent, the vessels being well seen ramifying over its surface. The fœtal head is to be seen and felt through the rupture. Without opening the specimen there is no evidence of hydatidiform change to be seen. Two very small fibroids are situated under the perimetrium, one at the fundus and one low down on the posterior wall. Some of these points are well seen in the accompanying photograph.

In my opinion the cause of rupture is one of those rare cases in which pregnancy has occurred in an infantile uterus, the thin wall of which has given way, a case parallel to rupture of one horn of a double uterus as reported by Donald.[1] The rupture here is at the fundus as in W. A. Freund's[2] case. The transparency of the uterus in the present instance was very similar to that noted in the pregnancy in one horn of a uterus didelphys which I reported in April 1926.[3] The fact of rupture taking place at the placental site is not unusual and may be due to some destructive effect of the chorionic villi, as suggested by Munro Kerr.[4] There was no question of any accident, or of any instrumental interference, the membranes being intact, and a living child earnestly desired.

A section has been cut through the whole thickness of the uterine wall at the site of rupture. It shows areas of extravasated blood associated with polymorphonuclear leucocytic infiltration. Numerous chorionic villi are also present. There are fibrous and muscle tissue present, apparently of normal type. There is not any hydatidiform change.

References.

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2. Hegar, A. *Beitr. Z. Geburtsh. u. Gynäk.* iv, 1.
3. Bride, J. W. *Journ. Obstet. and Gynæcol. Brit. Emp.*, 1926, xxxiii, 446.
4. Kerr, Munro, J. M. "Operative Midwifery," 619.

Two Cases of Congenital Ectopic Kidney Causing Obstruction to Natural Delivery.

By Mary E. Pease, M.B., B.S. (Lond.),
Resident Maternity Officer, Jewish Maternity Hospital.

CASE I.

The patient had a normal confinement lasting two days 16 months prior to admission. The child weighed 6½ pounds.

The patient was first seen at the Jewish Maternity Hospital on June 26th, 1929, when she was 32 weeks pregnant. On abdominal examination the head of the child, which could not be pushed into the pelvic brim, was found in the right iliac fossa and its back was to the left side and anterior.

On vaginal examination the pelvis was found to be a little small; the diagonal conjugate measuring 3⅞ inches. In the left posterior quadrant a small tumour, of the consistence of an ovarian cyst-adenoma could be felt, and was fairly mobile, but could not be pushed out of the pelvis. The cervix was high up and very difficult to reach. Rectal examination proved the tumour to be lying in front of the bowel, and a diagnosis of ovarian cyst was made. The patient was seen again on July 31st when conditions were unchanged.

Cæsarean section was performed by Mr. Leslie Williams on August 14th, 1929. The tumour in the pelvis was found to be a small ectopic kidney, otherwise normal, in length about three inches. The kidney could be moved on a short pedicle, but could not be lifted out of the pelvis.

The left ureter, which could be traced downwards towards the bladder, was short, in accordance with the position of the kidney, there being no abnormal looping. The renal blood-vessels were not traced as it was thought inadvisable to incise the peritoneum in front of the misplaced kidney. The right kidney was found in its normal position, the normal site of the left kidney being vacant.

The right and left ovaries and Fallopian tubes were present and normal and no other associated developmental error was discovered.

CASE II.

The patient was in the Jewish Maternity Hospital in 1921 and 1926 for her first and second labours respectively. The first labour was normal, lasting 14 hours 35 minutes. The child weighed eight pounds.

During the second pregnancy the head of the child was found above the brim in a position of right occipito-anterior. A tumour was discovered in the pelvis and a diagnosis of ovarian cyst was made. The size of the pelvis was normal.

Cæsarean section was performed by Mr. A. C. Palmer and the tumour proved to be the left kidney. It was situated on the posterior aspect of the pelvic wall just to the left of the mid line. Four fifths of its bulk was in the pelvis. It was beneath the peritoneum and mobile, but had no recognizable mesentery. By pulling from above it could just be lifted to the brim behind. The colour was dark brown and there were discrete nodules of fat on its surface. A large vein was seen coursing over its surface from below upwards, and disappearing beneath the surrounding fat.

The kidney was absent from the left loin but in the right loin the kidney was present There is no record of the condition of the ureter or other pelvic organs.

The question arises as to why in these cases there was no obstruction during the first labour. The probable explanation is that after labour there was some degree of sagging, owing to the greater laxity of the abdominal wall; consequently the left kidney was in a slightly lower position with the second pregnancy and therefore caused obstruction to the descent of the head into the pelvic brim.

In both cases the first and second babies were approximately the same weight, so the natural delivery of the first child cannot be explained on the grounds of its being smaller in size.

Whitridge Williams[1] describes a case in which a congenitally misplaced kidney found on laparotomy was pushed up out of the pelvis by the enlarging uterus.

Mr. Palmer and Mr. Leslie Williams have kindly allowed me to publish these cases.

1. Whitridge Williams. *Obstetrics*, 1920, 504.

BOOK REVIEWS.

"Biologie und Pathologie des Weibes" HALBAN-SEITZ. Band VIII. Part 3. (Lieferungen 38, 40, 42, 44, 46) : Urban and Schwartzenberg.

The last volume of the Halban-Seitz Handbook contains a very wide ranged collection of material. There is an article on veterinary obstetrics which gives a good account of abortion fever in cattle and contains some remarkable illustrations of obstetrical instruments. The article is extremely interesting for it seems that veterinary skill in obstetrics has reached a high plane and there is a bright prospect of obscure obstetrical problems being solved through investigations on lower animals. Sterility in animals is dealt with in a satisfactory manner.

Then follows a long article on Forensic Gynæcology by Reuter, which is likely to have little appeal in this country because of the different laws obtaining in England. The Sections dealing with rape and abortion contain important data.

Fischer then contributes an extremely interesting historical article on the advances made in obstetrics and gynæcology during the nineteenth century. The article is up to the standard of Fischer's admirable contribution in the first volume of the Handbook for it is full of references which enable the progress made in any branch to be traced throughout the last century with ease and simplicity. As was Fischer's custom in his previous article, due regard is paid to English workers, and just as Percival Pott received his due reward for first performing the operation of bilateral oöphorectomy so does Matthews Duncan obtain adequate recognition for his masterly work among the later Victorians. There is one point that must be emphasized. Fischer creates an atmosphere—doubtless unintentionally—of obstetrical and gynæcological progress approaching a limit beyond which further advance seems impossible. Perhaps to combat this impression the editors have placed some articles on abstruse problems after Fischer's article and certain autonomic nervous system problems are dealt with by Walthard and vitamines are discussed at great length by Guggisberg. In addition, there is a delightful article on the relationship between the pituitary body and the female generative organs by Ehrhardt which is thoroughly up to date, including accounts of Simmonds's disease and the recent work of Zondek, and Evans and his co-workers.

The volume closes with two articles which serve to balance the theoretical problems of the previous contributions for they deal with such matter of fact problems as Intra partum pyrexia and the influence of premature rupture of the membranes on the course of labour. Both articles are extremely interesting for the subjects are usually briefly dismissed in most books and yet they raise problems which are continuously being met with by those practising obstetrics.

And so ends the Halban Seitz Handbook. If all the volumes are considered together it is clear that progress has been the ambition of the editors. Great stress has been placed upon the younger branches of the old trees of obstetrics and Gynæcology and in many instances more weight has been placed upon new ideas and new lines of research than the orthodox might consider was warranted. But medicine is progressing beyond the tradition of Virchow and the new subjects of biochemistry, endocrinology, constitution and psychology are gradually becoming recognized and for these reasons the Handbook will serve as a standard work for many years to come.

Most of the articles have been well written. In all cases they have been comprehensive and no one can complain of the illustrations or of the lists of references. The editors can therefore be congratulated on producing this wonderful work and the thanks of research workers and scholars will be their reward.

Unfortunately the index and register has been compiled rather unsatisfactorily for those unfimilar with the details of the compilation of the Handbook. An alphabetical list of the main articles seems to be necessary and a list of the authors should have been included.

Wilfrid Shaw.

"Handbuch der Gynäkologie" : Veit-Stzeckel : Band V. Part I. Unbound 138 R.M. Bound 146 R.M. J. F. Bergmann, Munich.

This part of the new edition of the Veit Handbuch contains two contributions, the first by Kehrer, on the Vulva and its diseases, the second by V. Jaschke on Displacements and Prolapse. Both articles are of sufficient merit to be grouped among the most noteworthy publications on these subjects and the publishers are to be commended upon the magnificient way in which the volume has been produced. Print and paper are of the first order and the illustrations are remarkable in that a wonderful series of photographs has been accurately reproduced.

Kehrer's article on the Vulva is a treatise in itself, for 592 pages are devoted to the subject and the bibliography which is appended consists of over a hundred pages of references and would probably take a man many years of his life to read through. With an article of such length it seemed unlikely that anything dealing with the subject would be omitted or that any branch would be dealt with superficially. A perusal of the subject matter showed that this point of view was correct except that in some places more attention might have been paid to the therapeutic side. In short, it can be stated that if anyone wishes to know details of anything connected with the Vulva, whether it be the types of injury to which the Vulva is prone or whether it be the distribution there of the rash in small pox, let him refer to Kehrer's article. In the consideration of an article of such length, which is crammed full of such detail, a review must be limited to the general features otherwise its length becomes unwieldly. Certain sections are of outstanding merit, for example that on congenital defects with its emphasis on the embryological basis and its gradual merging into the article on Hypoplasia Vulvæ. The section dealing with variation in the distribution of hair in different diseases is full of interesting material, venereal diseases are described and illustrated very fully, while the article on skin diseases is exceptionally good.

Tuberculosis is, on the other hand, not so well described. When tumours are described the vast pathogolical knowledge of the German school is brought into play so that rare tumours are collected together and accurate statistics of the more common forms are discussed. Kehrer's contribution approaches the monumental. Although many comprehensive articles have been written by gynæcologists of the German school in recent years it is doubtful if any have reached the level that he has attained.

v. Jaschke's article is somewhat different. It is by no means so comprehensive but on the other hand it sifts the important material from the dross and then elaborates upon sound principles. A great deal of attention has been paid to the etiology of prolapse by the German school, particularly by Halban and Tandler, Martin, and more recently Sellheim. As a result their views are rather different from our own and in some ways are superior. For example the association of prolapse with constitution of the asthenic type is probably universally familiar to clinicians, yet it is not emphasized in our text books as it should be, while at the present time it is analysed academically on the continent. V. Jaschke's analysis of the etiology of prolapse and of retroflexion is extremely instructive for it indicates the opposing views of Halban and Tandler and of Martin and shows that there is still much to be done. Retroflexion is dealt with very well and a useful list of figures is given of the results of the different methods of treatment.

Rare forms of displacement of the uterus and adnexa, hernias and rotations are also included, and there is an instructive account of the cystoscopic appearance in cases of cystocele. The operative treatment of prolapse is well described and the statistical results of various operators and various operations are of great value.

The two articles are of great value indeed and together show that the Veit Stockel Handbook is going very far to outrival that of Halban Seitz.

Wilfrid Shaw.

"The Toxæmias of Pregnancy." By H. J. STANDER, (Associate Professor of Obstetrics, John Hopkins University Medical School). D. 9¼×6; pp. xi. + 161; London; Baillierre, Tindall and Cox; 1929.

THIS might be called a "Bibliography" of the toxæmias of pregnancy with notes by the author showing we know very little about them. This is not meant to convey the impression in any sense that there is not a great amount of first class original investigation in the study. Much original work has been done, but, as in the case of the excellent work which recently emanated from the Glasgow School on the same subject, the cause is not known, and a satisfactory treatment for all cases has not yet been achieved.

The work commences with a consideration of physiological pregnancy, after which the following classifications of the toxæmias is suggested :— (1) Vomiting; (2) low reserve kidney; (3) nephritis complicating pregnancy; (4) pre-eclampsia; (5) eclampsia; (6) acute yellow atrophy.

With regard to the first, there is no specific treatment, but, while the author states that he has seen most of the methods tried and is convinced that there are a few cases which do not respond to any of these methods, he does not come into the open and avow that induction is the only

method of treatment on some occasions: this is the belief of the reviewer, who believes that lives will be saved in the future by being a little more radical.

Although an excellent exposition is given of the low reserve kidney, it seems to us that the term is distinctly inadequate, and is inclined to confuse the issue. The other points with regard to classification and treatment are rather beyond discussion. The treatments suggested by most of the known obstetricians of the world are clearly and concisely enumerated.

There is one definite "slip of the pen" when the author states that morphine is omitted in the treatment of eclampsia at the Rotunda; this *was* dropped for a short time but has been revived during the present Mastership. There is no doubt in the mind of the reviewer as to its efficacy in treatment. Dr. Stander is to be thanked for, and congratulated on his valuable monograph.

B. Solomons.

"The Expectant Mother and her Baby." By Bodh Raj Chopra. Demy 8vo.; pp. 148 + xvi; Edinburgh, W. Green and Son, Ltd.; 8/6,

The book should assist in stimulating public opinion among the women of India and will prove of assistance to those who work among them.

It is intended chiefly for the expectant mother and is written simply with considerable detail. The author urges the necessity for educating the people of India, and suggests that the Government should carry out investigations and publish annual reports on the progress of such measures as may be adopted to reduce mortality among mothers and babies. He points out the need for skilled attendance at the time of childbirth.

M. L. Sparkes.

"The Causes and Prevention of Maternal Mortality." By H. Jellett, M.D., F.R.C.P.S. Empire Series, 8vo. $8\frac{3}{4} \times 5\frac{3}{4}$; pp. 300; London; J. & A Churchill; 15/-.

The information contained in this book is based on the experience gained by the author while teaching midwifery in Ireland, and more recently while working in an advisory capacity in connexion with the Maternity Section of the Public Health Department of New Zealand.

He describes the factors which affect adversely the maternal death rate, both in this country, in various parts of the Empire and on the Continent, and the efforts which are being made to reduce the avoidable mortality.

In all countries great stress is laid on the necessity for improvement in the education of students and midwives and it is pointed out that the maternal death rate is lowest in those countries which provide the longest training.

The curriculum and regulations for training in New Zealand are compared with the regulations of the Central Midwives Board and of the authorities governing Medical Education in this and other countries. The chief advantage of the regulations in New Zealand appears to be the recognition and approval of certain Hospitals only as training Schools for Midwives, so that a uniform standard of asepsis is taught.

The author considers that medical supervision during pregnancy is most essential and that eighty-five per cent of women could pass safely through labour with the assistance of a competent midwife, provided pre-natal examinations are carried out early in pregnancy and again at the 36th week by a medical man.

He considers that post-natal examination should be performed in every case within three weeks of delivery by one skilled in gynæcological diagnosis and treatment.

An interesting suggestion is that a certificate should be given by the person attending a patient during her first confinement, stating very briefly the obstetric facts of the case. The adoption of this suggestion would be of great value in guiding the attendant as to the best method of treatment during subsequent confinements.

In the chapter on antenatal care it is urged that internal pelvimetry should be practiced if there is any reason to suppose that the pelvis is contracted. The performance of prophylactic pubiotomy at the 26th to 30th week of pregnancy, if pelvic contraction is present, is warmly advocated, but no mention is made of the value of induction of labour in avoiding unnecessary and sometimes dangerous operative treatment.

Trial labour is condemned as unscientific, and unsuitable except in the most favourable circumstances.

The author considers the chief cause of the high maternal death rate is sepsis, and that in many cases it might be avoided by proper management of pregnancy and labour. The chief essentials are to guard the patient against unnecessary interference and undue haste by early diagnosis of mechanical obstruction, so that the best treatment possible may be given, by the use of sedatives by midwives as a method of preventing unduly prolonged labour with possibly artificial termination (provided the patient has been examined at a fairly recent date by a medical man). Also that obstetric anæsthesia might be given by midwives using a safety apparatus. (This has actually been practiced in New Zealand for the last four years with no ill results).

Sterilized obstetric outfits should be provided for the poor by Local Authorities. Sterilized packets should be obtainable from chemists for the well-to-do and the provision of such outfits should be compulsory.

The minimum outfit required for obstetric departments, by the Inspectors of Hospitals in New Zealand is described. Also the methods of disinfection practised.

The author stresses the danger of infection through immersion baths taken during last few weeks of pregnancy and during labour, particularly, alternate use of the bath in the Lying-In Ward for parturient and puerperal women.

The use and abuse of the obstetric forceps is discussed at length. The author considers its use a great factor in causing trauma and infection. He also mentions the importance of position, exercise and early rising for puerperal women, in promoting drainage and reducing the risk of embolism.

The last chapter in the book quotes the opinion of Public Authorities, in this and other countries, on causes of maternal mortality, and outlines some of the methods which are being used to reduce the death rate.

We quote the author's summing up as it describes the teaching of the book. "We can almost abolish the present mortality of normal

pregnancy and labour, by the removal of removable factors that tend to interfere with the normal course of either, by rigid abstention from unnecessary interference and by asepsis."

"We can largely reduce the present mortality of abnormal pregnancy and labour by antenatal care and diagnosis, prophylaxis, skilled treatment and once again asepsis."

Dr. Jellett must be congratulated on an interesting contribution to the literature dealing with mortality during childbirth.

M. L. Sparkes.

Review of Current Literature.

DIRECTOR: FRANK E. TAYLOR.
M.D., B.S. (Lond.), F.R.C.S. (Eng.), M.R.C.P. (Lond.), D.P.H. (Cantab.)

THIS Review will contain the lists of contents and abstracts of the more important articles from the following journals with which the "Journal of Obstetrics and Gynæcology of the British Empire" exchanges:—

British.—The Lancet; British Medical Journal; The Cancer Review.

Canadian.—The Canadian Medical Association Journal; Bulletin Médical de Quebec.

Australian.—Medical Journal of Australia.

American.—American Journal of Obstetrics and Gynecology; The Journal of the American Medical Association; Surgery, Gynecology and Obstetrics.

French.—La Gynécologie; Gynécologie et Obstétrique; Bulletin de la Société d'Obstétrique et de Gynécologie de Paris.

Belgian.—Bruxelles-Médical.

Italian.—Annali di Ostetricia e Ginecologia; Archivio di Ostetricia e Ginecologia.

German.—Archiv für Gynäkologie; Zeitschrift für Geburtshülfe und Gynäkologie; Zentralblatt für Gynäkologie; Monatsschrift für Geburtshülfe und Gynäkologie; Münchener Medizinische Wochenschrift.

Scandinavian.—Acta Gynecologica Scandinavica

South American.—Boletin de la Sociedad de Obstetricia y Ginecologia de Buenos Aires.

Japanese—Japanese Journal of Obstetrics and Gynæcology.

It is hoped that the Review of Current Literature will keep the readers of this Journal in touch with current work throughout the world. At the end of each year it is proposed to print an Index of all the subjects contained in the articles of the above journals. Arrangements will also be made to include abstracts of important articles on border-line subjects, such as Physiology, Biology and Biochemistry.

LIST OF ABSTRACTORS.

London: J. LYLE CAMERON, F.R.C.S.; R. C. LIGHTWOOD, M.D.; F. ROGUES, F.R.C.S.; JEAN SMITH, M.D.; F. E. TAYLOR, F.R.C.S.; A. WALKER, F.R.C.S.; JUSTINA WILSON, F.R.C.P.

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CLEIDOTOMY.

Sir,

In *The Journal of Obstetrics and Gynæcology of the British Empire*, Autumn Number, p. 667, in an abstract of Jankelowitch's paper, it is stated: "cleidotomy or clavicotomy was first performed and its technique described by Phänomenoff in 1895." I have corrected Jankelowitch's (also Wille's) erroneous statement more fully in the *British Medical Journal* of Sept. 21, 1929, p. 558; but I should be glad if you will publish the fact that a description of the operation was published by me in the *British Medical Journal* 34 years ago, on April 13th, 1895, seven weeks before the publication of Phänomenoff in the *Zentralblatt fur Gynäkologie* of June 1st, 1895.

The Editor, Journal of Obstetrics and Gynæcology of the British Empire.

Yours truly,
Herbert R. Spencer.

The Lancet.

July 6th, 1929.

A case of spasm of the cervix uteri. L. J. Green.

September 14th, 1929.

*A contribution to the study of the maternal death-rate. G. F. Gibberd.

A national maternity service scheme. (Leading article).

September 21st, 1929.

Is child-birth easy among primitive peoples? C. James (Correspondence).

September 28th, 1929.

*Glycerine in Cæsarean section. M. Salmond.

The training of midwives. (Leading Article).

A contribution to the study of the maternal death-rate.

The paper is based on a comparison between the conduct of labour at Guy's Hospital sixty years ago and to-day. Accurate statistics are available and the district from which the cases were drawn has not changed. In the Guy's reports, cases are not divided into those delivered in hospital and those delivered at home, but into those domiciled within a certain geographical area served almost exclusively by the hospital. The two series compared are 23,591 cases delivered between 1863 and 1875, and 21,423 cases delivered between 1919 and 1928. During the sixty years, the mortality rate has fallen from 4.4 per 1000 to 1.03 per 1000. Changes in the conduct of labour are, firstly, that obstetric interference is now resorted to in six times as many cases as sixty years ago, but even so the present interference rate is below nine per cent. In spite of this increase, improved technique has markedly reduced the danger of sepsis. Second, by antenatal care, which has markedly reduced the number of deaths attributable to disproportion, malpresentations and toxæmia. Thirdly, intravenous saline injections and blood transfusion have greatly reduced deaths from hæmorrhage, but concealed accidental hæmorrhage still accounts for as many deaths as before, the cause of death being profound toxæmia.

The death rate from intercurrent diseases has changed little and the author suggests 0.3 per 1000 as being a fair estimate of deaths from non-obstetric causes.

Glycerine in Cæsarean section.

At the Royal Free Hospital glycerine is applied to the cavity of the uterus during Cæsarean section and has been found to be most successful in controlling hæmorrhage and aiding retraction.

A. Walker.

The British Medical Journal.

July 13, 1929.

Difficult labour. F. R. Humphreys. (Correspondence).

July 20, 1929.

*The national inquiry into the causes of our high maternal mortality rate. T. W. Eden.

*The bactericidal power of the blood during pregnancy and the puerperium. D. Miller and J. R. Whitaker.

*The puerperal morbidity rate in patients delivered normally. A. M. Claye.

July 27, 1929.

*The Dick test in pregnancy. M. Salmond and B. Turner.

Full-term ectopic pregnancy. A. E. O'Donnell and T. A. Ogilvie.

Paraphimosis of the clitoris. K. S. MacArthur Brown.

The treatment of placenta prævia. H. Jellett (Correspondence).

August 3, 1929.

Maternal mortality. J. McGibbon. (Correspondence).

The Dick test in pregnancy. C. O. Stallybrass. (Correspondence).

Fees for attending on difficult labour. R. Paton. (Correspondence).

August 10, 1929.

An address on pelvic sepsis. L. McIlroy.

Maternal mortality. R. A. Gibbons. (Correspondence).

Treatment of placenta prævia. D. C. Macdonald. (Corrsepondence).

Breast-feeding by tuberculous mothers. F. G. Bushnell. (Correspondence).

August 17, 1929.

Puerperal sepsis and the general practitioner. A. F. W. da Costa. (Correspondence).

August 24, 1929.

Maternal mortality. J. P. Kinloch.

Treatment of placenta prævia. B. Solomons. (Correspondence).

The administration of sedatives by midwives. J. C. R. Richardson. (Correspondence).

Fees for attendance on difficult labour. A. W. Weston. (Correspondence).

Charles Clay and ovariotomy. W. F. Shaw. (Correspondence).

September 7, 1929.

The radium climacteric. P. C. Fenwick.

Antenatal clinics. E. F. Murray. (Correspondence).

September 14, 1929.

Antenatal clinics. H. Evers. (Correspondence).
Treatment of placenta prævia. D. C. Macdonald. (Correspondence).
Maternal mortality. T. Robertson (Correspondence).

September 21, 1929.

*The symptoms and diagnosis of placenta prævia. B. Solomons.
*The treatment of placenta prævia. F. H. Lacey.
*Inoperable carcinoma of cervix treated by radium transperitoneally. N. Asherson.
The history of cleidotomy. H. R. Spencer. (Correspondence).
The anæmia of pregnancy. S .A. McSwiney.

The national inquiry into the causes of our high maternal mortality rate.

Eden discusses the findings of the Aberdeen inquiry into maternal mortality. He stresses the importance of clearing up the relation between latent throat infection and puerperal sepsis. Isolation hospitals for septic cases are essential and must be separated from the lying-in wards.

The bactericidal power of the blood during pregnancy and the puerperium.

Contrary to the work of another worker, these authors find that there is little variation in the bactericidal power of the blood of a normal individual from hour to hour and from day to day when examined by Wright's "slide cell" method. The blood of 229 healthy pregnant women who had normal labours was examined at about the time of delivery. Of these, 17 had febrile puerperia. In 14 of these the bactericidal power of the blood was below the average and in three it was above. In 12 cases who had difficult labours, eight had a bactericidal power above the average and all recovered. Three were above the average and two of these died. During pregnancy there is a rise in the bactericidal power of the blood which reaches a maximum about the time of delivery and thereafter subsides. Albuminuria, difficult labour and hæmorrhage seem to depress the anti-bacterial power of the blood. Although there is a broad parallelism between the bactericidal power of the blood and the number of leucocytes, the relationship is not constant.

The puerperal morbidity rate in patients delivered normally.

1546 consecutive normal cases were examined to find whether one or more vaginal examinations increased the morbidity rate. Cases are classified as: (1) morbid—Minstry of Health standard; (2)sub-morbid—a temperature of 99° at least twice; (3) normal. Without vaginal examinations, the morbidity rate was 1.3 per cent and the sub-morbid rate 5.3 per cent, a total of 6.6 per cent. With vaginal examinations the figures were 2.3 per cent, 6.8 per cent and 9.1 per cent respectvely.

As a routine, the author considers that vaginal examinations are unnecessary and should not be carried out unless specially indicated. He considers that it is undesirable and unnecessary for midwives to perform vaginal examinations.

The Dick test in pregnancy.

Of 533 pregnant women tested by the Dick method, 373 were negative.

There was no significant difference found between the liability of the two groups to suffer from fever during the puerperium.

The symptoms and diagnosis of placenta prævia.

The author lays down the following definitions: (1) "when bleeding in the last three [lunar] months of pregnancy is caused by the separation of a placenta situated either wholly or in part on the lower uterine segment, the condition is known as unavoidable hæmorrhage, and the placenta is termed a placenta prævia, (2) central or total placenta prævia—where the placenta covers the internal os completely, when the whole of the palpable lower segment is covered by it and when its margin cannot be reached by the finger; (3) partial—where the internal os is partly covered; (4) lateral—where the edge can be felt just above the internal os in the lower uterine segment, but the os is not covered." The term "marginal" should be abandoned. The cause of the hæmorrhage and the reason for detachment are the same, they are (1) painless contractions of Braxton Hicks causing positive dilatation of the lower uterine segment; (2) disease of the placenta causing faulty attachment; (3) capsula development may prevent firm attachment. The blood comes from (1) opened placental site sinuses, and (2) the circular sinus and intervillous spaces of the placenta. A short account of the history of the discovery of placenta prævia is given, the credit goes to Rigby of Notts. The theories on the etiology are given, namely: (1) basal implantations; (2) capsular implantation; (3) defective vascularity of the decidua causing wide spreading of the placenta; (4) inflammatory or atrophic changes of the decidua; (5) placenta membranacea invading the lower uterine segment. The one great theory is that there is some disease of the endometrium, and the uterus should be curetted two months after a placenta prævia. The dangers to the mother are hæmorrhage, sepsis and torn cervix. The incidence over 60,000 cases was one in 183, with a mortality of one in 17. The 55 cases at the Rotunda Hospital had no mortality but the danger to the child is enormous. Twelve babies were born alive and two of these died in hospital.

There is little or nothing in the history to suggest the possibility of placenta prævia. The first symptom is hæmorrhage coming on without pain or other warning. The first hæmorrhage may be slight but the second may be profuse. Early diagnosis is of vital importance. Following the hæmorrhage, the author gives two pints of sub-cutaneous saline. He regards this to be of great importance. The abdomen is then examined. The uterus is soft and painless, the presenting part is high, and a souffle is heard low down. The diagnosis can only be made with certainty by feeling the lower uterine segment under the strictest aseptic and antiseptic methods. Treatment is carried out at once. Differential diagnosis is from accidental hæmorrhage, excessive show, ruptured veins, carcinoma, polypus and erosion. The important condition is accidental hæmorrhage. The points in the diagnosis from this are: (1) parity, placenta prævia usually in multiparæ, accidental hæmorrhage in primiparæ; (2) toxæmia usually accompanies accidental hæmorrhage; (3) period of pregnancy, placenta prævia usually premature; (4)pains usually accompany accidental hæmorrhage; (5) the abdomen is usually tense and the presenting part fixed in accidental hæmorrhage. In placenta prævia

the reverse is found. (6) The fœtus is usually dead in accidental hæmorrhage. It is alive at first in placenta prævia; (7) the hæmorrhage in accidental hæmorrhage is fluid blood stained serum, in placenta prævia it is fresh clotted blood appearing in gushes.

The treatment of placenta prævia.

The nomenclature used in this paper is different from that used in the previous paper. The term "lateral" is used when the os is approached or partly covered and marginal when only the margin of the placenta extends on to the lower uterine segment. The author advocates early active treatment of placenta prævia and does not approve of temporising. 562 cases have been treated at St. Mary's Hospital, Manchester, from 1919–1928: 19.2 per cent were primiparæ. The recognized methods of treatment are considered and the mortality of each method is given. The total mortality for the series of 562 cases is 4.9 per cent. In central placenta prævia the author considers that there is greater scope for Cæsarean section, particularly if at or near term. 75 per cent of the children were premature and the fœtal mortality high. Statistics from other clinics are quoted.

A. Walker

The Clinical Journal.

July 3, 1929.

*Case of twisted pedicle of the spleen. W. H. Bowen and H. Richards.

Aubust 7, 1129.

*The clinical significance of jaundice in the newly-born. N. Hill.

August 28, 1929.

*The treatment of malignant disease of the uterus by radium. G. P. Strachan.

September 4, 1929.

The cure of incisional ventral hernia by means of fascial grafts. H. C. Edwards.

September 11, 1929.

*Non-venereal affections of the genitalia. H. C. Semon.

September 25, 1929.

*Pitfalls in obstetrics. T. G. Stevens.

Case of twisted pedicle of the spleen.

Bowen and Richards record a case of twisted pedicle of an enlarged spleen in a married woman aged 32 years. In 1921 an abdominal tumour was present. An anæsthetic was administered with a view to exploration, but under the anæsthetic the tumour disappeared and no operation was performed. Since then the patient had felt a lump present which only gave a feeling of discomfort. In 1927 a child was born. On August 10, 1928, when getting on the bed severe abdominal pain occurred, and the tumour was felt to move. Vomiting ensued, with rapid pulse and abnormal temperature. Laparotomy was performed and a large congested spleen was removed. The pedicle was two to three inches in length, had undergone three complete turns and contained a prolongation of the pancreas. Recovery was uninterrupted.

The clinical significance of jaundice in the newly-born.

Hill classifies the causes of jaundice in the neonate into: (1) hæmolytic; (2) obstructive; and (3) toxic or infective, and considers that more than one of these factors may be at work in the production of the condition. Under hæmolytic jaundice he describes: (1) simple idiopathic or physiological jaundice (icterus neonatorum); (2) familial icterus gravis and (3) chronic family jaundice. Under obstructive jaundice he includes (1) malformation of the bile-duct; (2) syphilitic stricture of the common bile duct; (3) syphilitic disease of the liver (pericellular cirrhosis); and (4) gallstones. Toxic or infective jaundice is described under the heading of (1) catarrhal or infective jaundice of mild type, (2) severe infective jaundice and (3) Winckel's disease.

The treatment of malignant disease of the uterus by radium.

Strachan states his conclusions in the following words:—"It is obvious that while radium cannot yet be described as a 'cure' in all cases of advanced carinoma of the uterus, the results are enouraging, taking into consideration the initial extent of the disease in the cases reported. It has to be remembered that this treatment is in its early stages, and with improved technique, especially as regards the subjecting of all the primary and secondary tumour cells to the immediate effects of radium, improved figures the confidently to be expected. There is a vast field here for investigation and research, which is being energetically carried out in many centres. As a palliative agent, however, radium is the most potent that we possess, and in this alone has abundantly justified its use."

Non-venereal affections of the genitalia.

Semon discusses this subject under the following headings:—

1. General manifestations of the more important dermatoses.
2. Pruritus anogenitalis.
3. (*a*) Genital dermato-mycosis (ring-worm); (*b*) the epizootic infection.
4. Herpes genitalis; molluscum contagiosum; condyloma acuminatum.
5. Non-venereal ulcers of the genitalia.
6. Certain lymphatic affections.

Pitfalls in obstetrics.

Stevens discusses the following as the more common of the pitfalls in obstetrics:— (1) Pyelitis, in which he stresses the fact that there is no frequency of micturition. (2) Prolongation of the first stage of labour, stating that pituitary extract should not be given before delivery if there is the slightest suspicion of any disproportion between the fœtal head and the pelvis. (3) Twilight sleep, in which the treatment should not be begun until labour is well-established and the cervix about one-third dilated. (4) Occipito-posterior positions, in which it is laid down that to apply the forceps to an occipito-posterior position as such is bad midwifery. (5) General contraction of the pelvis, in which the high forceps operation is absolutely contra-indicated; and the conditions under which a trial labour may be allowed are discussed.

F. E. T.

St. Bartholomew's Hospital Report.

Vol. lxiii, 1929.

*Essay on air-borne infection in puerperal sepsis. R. R. Armstrong.

Essay on air borne infection in puerperal sepsis.

Armstrong thus summarizes his findings :—

1. Outbreaks of puerperal fever in hospitals are apt to be associated with the occurrence of sore throats amongst attendants.

2. Cases of puerperal fever occasionally carry Streptococcus pyogenes in their throats without complaint.

3. During outbreaks of puerperal fever normal mothers in contact occasionally harbour S. pyogenes in their genital passages or throats. Likewise attendants may become carriers, but without clinical signs of illness.

4. The evidence points to infection of attendants from patients, but how this occurs and by what means, under modern surgical technique, S. pyogenes in a patient's lochia find their way to the throat of the nurse in attendance, is not clear, unless, as is suggested in this essay, puerperal infection is primarily acquired in the mother's throat, thence spreads by droplet infection to her surroundings and her nurse and is conveyed, albeit unconsciously, by her own hands to her vulva.

5. Infection generally occurs at about the time of delivery, probably soon after; from three to five days elapse before the S. pyogenes establishes itself in the uterus and symptoms of puerperal sepsis appear. This period of incubation is explained as due to the slow passage upwards of infection from the vulva to the uterus, the motive force being the movement of the diaphram in respiration.

6. In view of the wide prevalence of S. pyogenes, it is improbable that the ideal of complete prevention of puerperal fever can ever be attained. Early detection of cases followed by isolation should, however, do much to arrest the spread of the disease and thus prevent enhancement of streptococcal virulence by passage, as has been successfully achieved in the case of scarlet fever, a disease also due to the hæmolytic streptococcus.

He also adds the following suggestions for prevention and control of puerperal fever :—

1. Parturient women with raised temperature should not be admitted into hospitals or lying-in homes until the risk of puerperal fever has been excluded by bacteriological test.

2. Every case of raised temperature occurring in a hospital lying-in ward should be examined bacteriologically to detect hæmolytic streptococci.

3. Positive cases should at once be removed and isolated.

4. No further admission to the ward should be made for at least five days.

5. Throat and cervical swabs should be examined from all contact mothers and throat swabs from all attendants, to detect streptococcus carriers.

6. Finally, a proper understanding of puerperal fever can only be obtained by a study of morbidity due to the disease, based on proper bacteriological investigation. The results of a study of mortality alone may be misleading. F. E. T.

The Newcastle Medical Journal.

Vol. ix, No. 2, January 1929.

*Ante-natal care as an aid and a policy. H. H. Evers

*Ante-natal work in private practice. L. M. Weeks.

Vol. ix, No. 4, July 1929.

Congenital hypertrophic stenosis of the pylorus. A. G. Ogilvie.

Ante-natal care as an aid and a policy.

Evers urges the universal adoption of ante-natal care by the general practitioner for the following reasons :—

1. Because it can help him so much in the avoidance of difficult and complicated labour in unsuitable environment.

2. Because pregnancy and labour have ceased to be strictly physiological phenomena.

3. Because its principles are so easily mastered, its practice entails so little expenditure of time and is welcomed by the patients.

4. Because it is by this means only that the medical man can arrest the present unfortunate tendencies of midwifery service, and can acquire that complete control which is essential for the public good.

5. Because the greatest promise of improvement in obstetrical results comes from the preventive side, and it is here that the medical man's trained judgment must be of inestimable value to the expectant mother and her child.

6. Because if he does not do the work, someone less desirable will be introduced to carry it out, and midwifery will automatically pass out of his control.

Ante-natal work in private practice.

Weeks describes the routine employed in ante-natal work in private practice and points out that the benefit derived from it, both to doctors, mothers and children can only be appreciated by comparing the results of the present time and a few years ago. The doctor is able to reduce the number of abnormal presentations and to treat successufully cases which would otherwise give much anxiety. It gives him the better knowledge when other advice is necessary. The puerperium is rendered more satisfactory in some cases. Many mothers and infants who would otherwise have died, are saved. Many mothers are saved long and weary labours and subsequent pain, and even permanent impairment of health, while the babies escape severe lacerations from forceps deliveries or broken arms from breech presentations with extended arms. F. E. T.

The Canadian Medical Association Journal.

July, 1929.

*The induction of labour. W. R. Fletcher.

The induction of labour.

In the Royal Victoria Montreal Maternity Hospital and the old Montreal Maternity Hospital from 1923 to 1927 inclusively, 240 cases of labour were

induced. Of these, 206 cases (86 per cent) were bag-inductions, and 34 cases (14 per cent) bougie-inductions.

The indications for the bag method were :— toxæmia, eclampsia, albuminuria, hypertension and pernicious vomiting; disproportion due to various types of contracted pelvis; hæmorrhage due to placenta prævia, premature separation and low implantation of the placenta :—14.1 per cent. These three groups constitute 81 per cent of all indications.

The complete duration was from the time the bag was introduced until the birth of the baby. The duration of the bag only was from the time it was introduced until it was expelled. The duration of the pains was from the time the pains began after the introduction of the bag until the baby was born. A table shows complete duration of induction :—total cases 23.7 hours; primigravidæ 33.8 hours; multiparæ 17.7 hours. Duration of bag only :— Total cases 18.3 hours; primigravidæ 25.1 hours; multiparæ 13.7 hours. Duration of pains :— Total cases 15.8 hours; primigravidæ 23.0 hours; multiparæ 11.5 hours.

A table for bougie-induction is given ;—Complete duration of induction : total cases 40.1 hours; primigravidæ 52.2 hours; multiparæ 26.8 hours. Duration of bougie only :—total cases 26.1 hours; primigravidæ 37.7 hours; multiparæ 13.6 hours. Duration of pains :—total cases 21.0 hours; primigravidæ 32.9 hours; multiparæ 10.8 hours. In five cases bougies failed and the bag method was resorted to.

The tables show that bag induction takes longer than ten hours as is usually taught; and also that in primigravidæ the induction time by either method is double that in multiparæ.

The danger of bag induction is prolapse of the cord. This occurred in 13 cases (6.3 per cent); of these 13 cases eight babies were born alive, five dead; a total mortality of 38.4 per cent from prolapsed cords.

The maternal mortality from the 206 cases of bag induction was two cases, or 1.94 per cent; the infant mortality nearly 23 per cent; 29 per cent were classed as febrile.

Of the 34 cases of bougie induction there were no maternal deaths; 15 per cent infant deaths; and 18 per cent febrile.

The technique for bag-induction was :—Enema, shave, lithotomy position and vulva and vagina scrubbed with green soap and sterile water, followed after catheterizing by biniodide solution. The cervix was exposed by a posterior retractor and pulled down by a tenaculum forceps. Dilatation was accomplished by Hegar's dilators till the index finger could be introduced and the membranes stripped back. The bag was then rolled tightly and grasped by a special pair of forceps, resembling a Tarnier's forceps on a small scale with a special sliding lock so that the blades could easily be disengaged by merely pulling back the anterior blade about half an inch. When introduced the bag was partially filled with sterile water by a rubber bulb. The forceps were then removed and the bag completely filled and the stem tied. Packing was usually inserted around the neck of the bag and into the vagina. A one pound weight was attached to the bag after pains had begun.

J. Lyle Cameron.

Journal of the College of Surgeons of Australia

Vol. ii, No. 1, July 1929.

*A contribution to the pathology of carcinoma of the ovary. E. S. J. King.
*Isthmio-spasm of the Fallopian tubes: A cause of sterility in women. C. Coghlan.

A contribution to the pathology of carcinoma of the ovary.

King reports two such cases which, he thinks, suggest a possible nature for some ovarian neoplasms. The first demonstrates papillary development in a luteal cyst with an epithelial lining, and the second was a tarry luteal cyst with a carcinomatous growth from the wall into the lumen. The interpretation he suggests, therefore, is that growths, papillomata and carcinomata, may arise from the heterotopic epithelium lining luteal cells.

Isthmio-spasm of the Fallopian tubes: A cause of sterility in women.

The condition of the tubo-uterine function to which Rubin has given the name "isthmio-spasm" was found six times in a series of sixty-five patients (almost ten per cent) examined for sterility, and Coghlan considers that as these patients were not all examined under X-rays the percentage may possibly be higher. The presence of this spasm suggests the presence of a sphincter muscle in the intramural portion of the Fallopian tube although it has not been defined anatomically. A similar condition exists at the lower end of the œsophagus, namely, cardio-spasm, and here also sphincter fibres have not been demonstrated.

F. E. T.

The Medical Journal of Australia.

No. 14, April 6, 1929.

*Carcinomatosis of the peritoneum. J. Fiddes and J. A. McLean.

No. 16, April 20, 1929.

Superfœtation. R. A. Willis.
Large congenital umbilical hernia. P. L. Hipsley.
The Chair of Obstetrics in Melbourne. (Leading article).

No. 18, May 4, 1929.

Symmetrical uterus bicornis. B. Dawson.
The bacterial flora of infants' stools. K. Maddox. (Correspondence).

No. 19, May 11, 1929.

Prophylactic obstetric practice. A. C. F. Halford. (Correspondence)

No. 20, May 18, 1929.

*Hyperemesis gravidarum: with special reference to treatment by glucose and insulin. C. E. D'Arcy.
The prevention and management of placental site hæmorrhage in the home. A. C. Cunningham.

No. 22, June 1, 1929.

*Hyperacute pulmonary œdema occurring in labour. P. W. Rice and L. Opit.

No. 23, June 8, 1929.

Infant Mortality. E. S. Morris. (Correspondence).

No. 25, June 22, 1929.

The Professor of Obstetrics in Melbourne. (Current comment).

No. 26, June 29, 1929.

*The occurrence of Brucella abortus (Bang) in market milk and its relation to disease in man. H. E. Albiston.

Carcinomatosis of the peritoneum.

Fiddes and McLean describe four cases of carcinomatosis of the peritoneum in women aged 81, 28, 65 and 03 years respectively. In one case the source of the growth was a ruptured ovarian cyst. In the other cases the origin was not obvious until confirmed by microscopic examination, and the resemblance of these tumours to so-called primary endothelioma of the peritoneum is pointed out. The authors agree with many authorities that primary carcinoma of the peritoneum is a very rare condition and that the great majority of the cases reported as such have a primary focus elsewhere which, being insignificant, has been overlooked.

Hyperemesis gravidarum: with special reference to treatment by glucose and insulin.

D'Arcy considers that the classification of hyperemesis into two types, the toxæmic and the neurotic, gives students and young graduates a wrong impression, so that many patients have been allowed to slip too far by inexperienced medical advisers, the neurotic element having been overstressed and given too much weight in the judgment of the medical advisers.

In mild hyperemesis the general method of treatment which D'Arcy adopts is to put the patient to bed, if possible out of doors on a balcony. A ward where patients are vomiting after an anæsthetic is the worst possible place for a patient suffering from the vomiting of pregnancy. Hospital patients are usually constipated, so an enema is given and a dose of calomel at night and, if tolerated, a saline in the morning. The patient is encouraged to drink orange drinks with glucose, barley water with fruit juice and water. Should she continue to vomit, a five per cent solution of glucose in saline solution is administered *per rectum*, usually three hundred cubic centimetres (ten ounces) every four hours or, if better tolerated, by the continuous Murphy's drip method. If she salivates, atropine 0.54 milligramme (one one hundred and twentieth of a grain) is given every eight hours. Nearly all medicine by mouth nauseates, more especially when the substance is gritty by nature. An alkaline mixture containing a soluble form of bismuth is sometimes beneficial and well tolerated. Toxæmia causes acidosis and the vomiting and consequent starvation increase the acidosis. Rest in bed with freedom from anxiety for a few days, together with absorption of fluid and glucose will put right the patient with average mild hyperemesis. A patient with a more obstinate form is sometimes enabled to carry on her pregnancy by the administration of extract of *corpus luteum*.

Hyperacute pulmonary œdema occurring in labour.

Rice and Opit record the following case of this uncommon condition which rapidly responded to appropriate treatment.

A multipara aged forty-six had had six normal confinements. There was no history of any illnesses. Four weeks prior to labour antenatal examination, including that of the urine, revealed nothing abnormal. At 2 a.m. on January 20, 1929, an urgent call was received from the hospital to the effect that Mrs. M. who had walked into the hospital half an hour previously, having experienced early labour pains just before admission, but otherwise in the best of spirits, had suddenly collapsed, was deeply cyanosed and appeared to be dying. The patient presented the characteristic features of hyperacute pulmonary œdema, namely, deep cyanosis, most embarrassed breathing and the bringing up of copious quantities of pink, frothy fluid. Her skin was cold and drenched with sweat. The pulse was rapid, but regular and the systolic blood pressure 150 millimetres of mercury. Treatment consisted essentially of hypodermic injection of morphine sulphate 0.015 gramme (one-quarter of a grain) and atropine sulphate 0.86 milligramme (one seventy-fifth of a grain) with venesection (four hundred and twenty cubic centimetres or fourteen ounces). A catheter specimen of the urine contained heavy albumin which cleared up entirely within forty-eight hours of delivery when the systolic blood pressure was 120 millimetres of mercury. In half an hour after treatment was commenced the patient looked much better—her colour was nearly normal and breathing unembarrassed though "rattly." There was no more frothy fluid brought up and her pulse was stronger.

The slight pains which commenced before her admission continued until that afternoon when at 3 p.m. breathing again became difficult and very "rattly."She was cyanosed and seemed to be drifting into her previous dire state. As the os was then well dilated delivery was performed under light chloroform anæsthesia with the forceps. Her condition improved from then on until her discharge from hospital three weeks later, when she was in normal health.

The occurrence of Brucella abortus (Bang) in market milk and its relation to disease in man.

A two years investigation of the milk supply of Melbourne has shown that 25 per cent of the farms examined were supplying milk infected with *Bacillus abortus*.

Undulant fever due to infection with *Brucella melitensis* is not endemic in Victoria. Very little, if any, goat's milk is used for human consumption in this State. As the milk consumed by the people in Melbourne and its suburbs has been shown to be infected with *Brucella abortus* to a considerable degree it might reasonably be assumed that the milk supplies in other cities in the Commonwealth are similarly infected.

Albiston therefore suggested that in Australia much light could be thrown on the relation of *Brucella abortus* to disease in the human being. If sera forwarded to public health and other laboratories from patients suspected of infection with typhoid of paratyphoid infections or suffering from pyrexias of unknown origin, were examined for agglutinins against *Brucella abortus* and haemocultural investigations were carried out, valuable information on this question might be obtained.

F. E. T.

The Indian Medical Gazette.

Vol. xliv, No. 1, January 1929.

*Cæsarean section. Some types and their uses. S. A. McSwiney.

An interesting case of melæna and hæmatemesis in a newly born baby. S. C. S. Gupta.

A case of foreign body in the vagina. B. K. Banerjï.

Vol. xlviv, No. 2, February 1929.

A preliminary note on the action of vasopressin and oxytocin. J. C. David and C. Vareed.

*Occurrence of chyluria after confinement. S. S. Rad.

Vol. xlv, No. 2, February 1929.

*Plasmogenia in pregnancy. K. V. Thakkar.

An interesting case of recurrent pregnancy toxæmia. S. C. Bone.

Vol. xliv, No. 5, May 1929.

*A huge ovarian cyst. C. Nath.

Some reflections on obstetrics and gynæcology during 1928. V. B. Green-Armytage.

Vol. xliv, No. 6, June 1929.

The treatment of vesico-vaginal fistula by rectal transplantation of the ureter. F. C. Faser.

On the rationale and treatment of carcinoma of the cervix uteri. S. Mitra.

A case of psuedo-pregnancy. P. Sharma.

Cæsarean section: some types and their uses.

The types discussed are :—

1. The classical Cæsarean section.
2. The lower uterine segment Cæsarean section, and
3. Cæsarean hysterectomy.

Occurrence of chyluria after confinement.

The points of interest in Rad's case of chyluria after confinement are :—

1. The onset of chyluria following confinement due to relaxation of pressure as also to the strain of confinement, either of which would cause the dilatation of lymphatics and their rupture, and

2. The total absence of microfilariæ in the blood of the new-born baby and in the breast milk of the mother although the mother's blood showed a heavy incidence of microfilariæ.

Plasmogenia in pregnancy.

Having successfully treated four patients with malaria with plasmogenia without any ill effect on the uterus, Thakker is convinced that in plasmogenia we have a drug which is a useful addition to our armamentorium as a substitute for quinine of equal if not superior value, in cases of pregnancy complicated by malaria.

A huge ovarian cyst.

The cyst weighed 34 pounds, 5 ounces, 5 drachms and was successfully removed.

F. E. T.

American Journal of Obstetrics and Gynecology.

June 1929.

*Bone marrow stimulation in the puerperal woman by injection of pituitrin and intravenous glucose and its clinical application. J. Hofbauer.

The removal of blood plasma and the reinfusion of corpuscles in the treatment of the convulsive toxæmia of pregnancy. F. C. Irving and J. V. Taylor.

*Observations on sixty cases of hyperemesis gravidarum. C. H. Peckham.

*A comparison of blood calcium levels between and during menstrual periods. E. Allen and H. C. Goldthorpe.

The Sloane Hospital for Women: Its development, significance, and possibilities. J. W. Williams.

Endometrioma. A clinical and pathologic study on 159 cases treated at the Clinic of the Free Hospital for Women, Brookline, Mass. G. Van S. Smith.

Marmaduke B. Wright and cephalic version. H. Thoms.

*Report of a case of leiomyoblastoma and papillary cystoma of the ovary. I. F. Stein and B. Bloom.

Chorioadenoma and choriocarcinoma of uterus. S. A. Wolfe.

Varix of the umbilical cord with report of a case. F. L. Adair and R. E. McDonald.

*The treatment of leucorrhœa. F. L. Payne.

The treatment of uterine fibromyomas. F. E. Keene and F. B. Block.

Results of X-ray therapy in myoma and other non-malignant lesions of the uterus. G. M. Laws.

Cæsarean section of Fritsch's technique with a report of sixty consecutive cases without mortality. J. Niemack.

Puerperal morbidity at the Greenpoint Hospital. D. Kuperstein.

Regurgitation of menstrual blood from one of double uteri caused by congenital atresia. F. Allen.

Further simplification of the tubal insufflation test. A. Jacoby.

An improved anal shield. L. A. Campbell.

A new obstetric bed. A. C. Williamson.

Collective Review—A review of the gynecologic literature of 1928. S. S. Schochet.

July 1929.

*Infected endometrial cysts of the ovaries. J. A. Sampson.

*Carbohydrate metabolism in eclampsia. H. Stander and E. Harrison.

*Fluctuations in blood-sugar during eclampsia. The relationship between the blood plasma sugar and the corpuscular sugar variations in eclampsia as shown by serial curves. Preliminary report. P. Titus and E. Willetts.

*Fluctuations in blood-sugar during eclampsia. Analysis of Titus-Willetts data to determine effects of anticoagulant on plasma-volume and cell-volume relationships. H. Lightbody.

The classification of the toxæmias of pregnancy. P. F. Williams.

Blood-pressure readings in 1,000 pregnant women. E. Cornell.

On the occurrence of ovarian and anterior pituitary hormones in the urine of pregnant women. C. Mazer and J. Hoffman.

The investigation of the relation of sperm morphology to fertility by means of microdissection. G. Moench.

The cervix in labour. L. Loizeaux.

The infiltration of the cervix uteri with mercurochrome 220 soluble in the treatment of cervicitis and endocervicitis. F. Helvestine, Jr. and F. Farmer.

Coagulation diathermy in cervicitis, using a new electrode, with an account of the results in 200 cases. F. Ende.

The erythrocyte-sedimentation test in gynæcology. C. Stimson and H. Jones.

Pelvic fascia dystocia. I. Wilens.

A statistical study of puerperal morbidity in hospital practice. M. Tansinsin.

Malignant growths of the uterus in young girls. B. Hirst.

Cerebral birth hæmorrhage in premature and immature infants. A. Capper.

Appendicitis in pregnancy. A. McDonald.

Report of a case of medullary carcinoma of the ovary. J. Sarnoff.

Peritoneal implantations of ovarian cyst contents with decidual resemblances. M. Ballin and P. Morse.

Hydatidiform mole followed by normal pregnancy and childbirth. W. Van Auken.

Report of a case of uterus bicornis unicollis. M. Magid.

A method for demonstrating the mechanism of labour. H. Thoms.

Trowel vaginal retractor. L. Rudolph.

A new radiographic table. I. Stein and R. Arens.

Papilloma of the nipple. W. Fullerton.

Selected abstracts—Ovarian newgrowths.

August 1929.

Spinal anæsthesia in obstetrics and gynecology. G. Pitkin.

Three phases of gynecologic palstic surgery. R. Frank.

*The outcome of 625 pregnancies in women subjected to pelvic radium or Roentgen irradiation. D. Murphy.

The key fibroid. E. Ries.

Microcephalic idiocy following radium therapy for uterine cancer during pregnancy. L. Goldstein and D. Murphy.

Leucorrhœa, with special reference to trichomonas vaginalis. C. Davis.

Examination of the blood in the newborn with reference to treatment for hæmorrhage. W. Carr.

*Report of investigations to determine the therapeutic dose of dextrose (d-glucose) administered intravenously. P. Titus and H. Lightbody.

The incidence of syphilis among pregnant negro women. C. Wilson.

Metaphen in the treatment of puerperal septicemia and other blood stream infections. J. Bernstine.

Diathermy as an adjunct in the treatment of pelvic inflammatory disease. L. Scheffey and W. Schmidt.

A study of fifty consecutive ectopic pregnancies. R. Grier.

Puerperal morbidity without disinfection of the vagina. C. Gordon

Treatment of endocervicitis with actual cautery and electro-coagulation. W. Harriman.

A case illustrating the value of the X-ray as an aid in the management of polyhydramnios. A. Beck.

Uterocystography. E. Steinharter and S. Brown.

A new uterine cannula, gas-tight, oil-tight and self-retaining. S. Meaker.
A case of pregnancy in uterus didelphys. H. Mills.
Report of a case of terrata katadidyma. C. Updegraff.
Suprapubic transvesical operation for vesico-vaginal fistula. N. Sears.
A case of ruptured uterus following classical Cæsarean section. E. Cornell.
Spontaneous severence of umbilical cord. L. Douglass.
Double renal decapsulation for puerperal anuria. I. Krellensrein.
A new pelvimeter. H. Stuckert.
Selected abstracts—Sex of the fœtus.

Bone marrow stimulation in the puerperal woman by injection of pituitrin and intravenous glucose and its clinical application.

The author states that the data presented in this article serve to establish the fact that by a combination of the intravenous administration of hypertonic glucose solution with a preliminary injection of pituitary extract a vigorous, stimulating effect on the bone marrow of the puerperal woman can be evoked. The bearing of the increased functional activity of the reticulo-endothelial system on the treatment of puerperal infection is therefore worthy of thought. In his experience, transfusion preceded by an injection of pituitrin gives better results in septic processes than when used alone. Glucose as a stimulant of phagocytic tissue elements, appears to be of particular value in those cases where a tendency becomes manifest toward localization of the infection in the parametrium.

Observations on sixty cases of hyperemesis gravidarum.

Peckham concludes from an extensive study that vomiting of pregnancy sufficiently severe to warrant admission to hospital, occurs about once in one hundred and fifty pregnancies, and severe cases occur once in four hundred. Women in the upper walks of life are more prone to the disease, but age and parity do not appear to be predisposing factors. Severe vomiting usually starts before the eighth and occasionally before the fourth week of pregnancy. Neither the time of onset, duration of vomiting, nor loss of weight indicates the severity of the disease nor affords a safe guide for prognosis. A high pulse-rate usually indicates severe vomiting but does not necessarily imply a serious prognosis. On the other hand, a low pulse may persist in a severely ill patient. Fever due to dehydration is frequent. The author finds that albumin is often present but that acetone bodies are frequently absent. The ammonia coefficient is of little value in prognosis. In mild cases the blood chemistry is unaltered, but in severe ones the N.P.N, uric acid and sugar tend to be increased. He finds that in most patients isolation in a hospital and suggestive treatment will effect a cure, but, exceptionally all therapy fails and the induction of labour is indicated. A considerable percentage of patients abort spontaneously.

A comparison of blood calcium levels between and during menstrual periods.

The result of the study by Allen and Goldthorpe is to show that the present methods of blood calcium determination do not reveal an appreciable or constant effect of the normal menstrual period on the calcium content of the blood.

Report of a case of leiomyoblastoma and papillary cystoma of the ovary.

Numerous instances of two coexistent types of neoplasm have been

recorded, including benign and malignant tumours of various kinds, but as far as Stein and Bloom know, no similar case to theirs has been reported. In their case a benign papilloma of the ovary developed a malignant smooth muscle sarcoma. The patient's age was 65 and the case is fully described with post mortem findings.

The treatment of leucorrhœa.

Payne reports an analysis of 171 cases of leucorrhœa. The most common lesions proved to be: cervicitis in 27; simple laceration in 24; multiple lacerations with erosions in 85 and hypertrophy with cystic changes in 35. He finds that by cauterization 93 per cent were cured or improved in 70 cases. Trachelorrhaphy gave 96 per cent cure or improvement in 24 cases, and in 77 cases the modified Sturmdorf procedure gave 95 per cent cure or improvement.

Infected endometrial cysts of the ovaries

Sampson has encountered three patients with infected endometrial cysts of the ovaries, two of which were bilateral. In the first case, endometrial cysts were present in both ovaries. The cysts were infected with a gram-negative bacillus, having many of the cultural features of the paratyfoid group. A similar organism was obtained from the urine. The bacteria apparently reached the cysts through the blood stream. The primary source source of the infection was not ascertained.

In the second case, endometrial cysts were also present in both ovaries. Cultures failed to show any growth, but a gram-positive coccus occurring singly, in pairs and in short chains was found in smears from the contents of the cysts, as well as in sections stained by the Gram-Weigert method. The abdominal wound became infected with a similar organism which also failed to grow in culture media. As in the previous case, the bacteria apparently reached the cyst through the blood stream. The primary source of the infection was not ascertained.

In the third case, a large endometrial cyst of the left ovary, filled with foul-smelling, purulent, bloody fluid was present. The cyst was fused with the sigmoid. Cultures and smears were not made. Gram-negative bacilli were found in the purulent exudate of stained sections of the cyst wall. Circumstantial evidence indicated that the cyst became infected from the sigmoid, but the induration present in the portion of the wall of the intestines fused with that of the cyst might have been due to the extensive endometriosis which was present in the posterior cul-de-sac. This cyst might have been infected through the blood stream.

These three cases with five infected endometrial cysts are too few in number from which to draw conclusions. However, they suggest that endometrial cysts of the ovaries may readily become infected. Their bloody contents often containing bits of necrotic material, the trauma associated with their reaction to menstruation, the fact that an epithelial lining is often lacking in portions of the cyst (especially the larger ones) thus lessening the protection of their contents, all predispose to their infection from bacteria invading the cyst through any channel and especially that of the blood stream. In addition, the incidence of perforation of their walls might lead to bacteria reaching their contents from infection in the pelvis at that time.

Carbohydrate metabolism in eclampsia.

Many observers have reported hyperglycemia in eclampsia. A detailed study of the blood sugar in eclampsia was undertaken because two investigators (Titus and Lévy) claim that hypoglycemia is characteristic of eclampsia and particularly because Titus actually attributes the convulsion to relative hypoglycemia. The findings of Stander and Harrison are contrary to such a contention. None of their charts show a downward tendency of the blood sugar, except of course, where insulin was administered. In only three instances in the fifty cases reported did they find blood-sugar values which could be regarded as hypoglycemic, and even these are far above the convulsive hypoglycemic level.

They conclude, therefore, that in the majority of cases of eclampsia there is a tendency toward hyperglycemia and that the blood-sugar level remains fairly constant throughout the disease. As there is no relative hypoglycemia, that condition cannot be utilized to explain the production of eclamptic convulsions, and these convulsions are not comparable to insulin hypoglycemic convulsions. Following eclamptic convulsions there is a slight rise in blood-sugar. A patient may have eclamptic convulsions with the blood-sugar at different levels, and these levels are not greatly disturbed by the convulsions.

In view of these findings it will be of interest to read the next following abstract in which Titus re-affirms the opposite opinion.

Fluctuations in blood-sugar during eclampsia. The relationship between the blood plasma sugar and the corpuscular sugar variations in eclampsia as shown by serial curves. Preliminary report.

Titus has previously demonstrated wide fluctuations in blood-sugar values during eclampsia with the convulsions almost invariably preceded by sharp falls in blood sugar. These periods of suddenly lowered values he termed "relative hypoglycemia." These findings have been corroborated by others.

The authors find these conclusions are both consistent and convincing because they accomplish several things; they establish the relationship between the convulsions of eclampsia and a disturbance in carbohydrate metabolism which they had previously postulated; they offer a conclusive explanation for the beneficial effects previously noted in eclampsia from intravenous injections of dextrose; they advance our knowledge of the ætiology of this disease to the extent which they have outlined and they believe that they also establish a relationship between the toxæmias of both late and early pregnancy since they have found similar but much more slowly attained low blood-sugar values in hyperemesis gravidarum. The authors now suggest that the sugar of the blood be determined as blood plasma sugar and corpuscular sugar considered separately.

In a preliminary report it may be said: (*a*) that the circulating sugar which is most mobile or most readily available is in the plasma, and (*b*) that it is not until the corpuscles are deprived of their sugar that a convulsion occurs. (*c*)The first evidence of recovery is an increase in plasma sugar, probably obtained from the hepatic stores, after which the plasma sugar values subside as the corpuscular sugar increases, obviously during replenishment of the erythrocytes from their surrounding plasma. They point out that these fluctuations as well as the eclamptic convulsions can

usually be stopped abruptly at any point by the hypodermic administration of morphine and the intravenous administration of hypertonic dextrose solutions.

Fluctuations in blood-sugar during eclampsia. Analysis of Titus-Willetts data to determine effects of anticoagulant on plasma-volume and cell-volume relationships

In the foregoing study by Titus and Willetts it was thought that the collection of different amounts of blood on the same amounts of anticoagulant salt might alter the cell volume through osmotic pressure. Consequently it was deemed advisable to analyse the data in the protocols in the Titus-Willetts investigation in order to establish whether or not the ratio of plasma volume to cell volume is a constant.

Lightbody finds that the variations in the reported sugar values for cell and plasma cannot be accounted for by alteration in cell volume due to the use of varying amounts of salt anticoagulant, provided the cell existence as a suspended particle is maintained.

The outcome of 625 pregnancies in women subjected to pelvic radium or Roentgen irradiation.

Murphy has studied six-hundred-and-twenty-five pregnancies in women subjected to pelvic irradiation treatment to ascertain the influence of irradiation upon the length of pregnancy and upon the health and development of the subsequent children. He concludes that irradiation before conception may be followed by the birth of unhealthy or defective children, but it cannot definitely be stated that such maternal treatment has a detrimental influence on the health of subsequent children.

Irradiation of the pregnant woman is extremely likely to be followed by the birth of seriously defective offspring. The frequency of these defects and their conformity to a type of which microcephaly is the most common, strongly suggest that they are the result of the irradiation received by the embryos in utero. It is believed that diagnostic curettage should always precede pelvic radiotherapy in order to avoid possible irradiation of the growing embryo.

The conclusion is reached that the pregnant uterus should never be subjected to radiotherapeutic exposures. It is further deemed advisable that should a growing embryo unwittingly be irradiated and its existence later be discovered, such a pregnancy should be terminated at the earliest possible moment.

Report of investigations to determine the therapeutic dose of dextrose (d-glucose) administered intravenously.

Titus and Lightbody are of opinion that an average dose of 25 per cent dextrose solution is the most desirable concentration. They have established by their previous work that the proper rate of injection into an average sized adult should consume at least thirty to thirty-five minutes for every 25 gm. of dextrose. These present investigations apparently establish the therapeutic intravenous dose of dextrose at 75 gm. for an average sized adult. Less than this will not give the maximum therapeutic effect, and more than this is likely to produce a reaction from over-stimulation of the insulin-producing activity of the patient's pancreas.

Single intravenous doses of dextrose repeated from one to three times daily as necessary are preferable to prolonged injections for this same reason of excessive endogenous insulin-production. It is likely that many "reactions" attributed to faulty dextrose administration have actually been hypoglycæmic reactions from prolonged overdosage with dextrose resulting in over-stimulation of the pancreas. By averaging in one's adult patients such variable factors as body weight, individual differences in pancreatic activity, variations in nourishment and previous medication, it is possible to make a broad statement as to the average routine administration of dextrose. The most beneficial results seem to follow the intravenous administration to an adult of 75 gm. dextrose in a volume of 300 c.c. (25 per cent) during a period of ninety to one hundred minutes. Other concentrations of solution or lesser amounts may be used according to individual requirements, but the above represent safe and adequate average standards of dextrose dosage.

W. W. King.

American Journal of Diseases of Children.

Vol. 37, No. 4, April 1929.

*Atropine fever in early infancy. J. White.

*Late death as a result of cerebral hæmorrhage at birth. J. Glaser.

Congenital duodenal stenosis and atresia. A. G. De Sanctis and J. W. Craig.

Vol. 37, No. 5, May 1929.

Origin and fate of iso-agglutinins in blood from the umbilical cord. J. McK. Mitchell.

Vol. 37, No. 6, June 1929.

Vitamin B requirements in infancy. A. P. Bloxsom.

The effect of ultra-violet light on the blood of new-born infants. H. N. Sanford.

Congenital hemolytic icterus: treatment with splenectomy; report of two cases. J. M. Masters, L. G. Zerfas and H. B. Mettel.

Atropine fever in early infancy.

As atropine is now becoming a therapeutic agent with several indications in young infants a knowledge of its actions is of importance. The main indications for the drug are pyloric stenosis, gastro-enterospasm (pylorospasm), and pulmonary œdema.

The author found that 13.8 per cent of his hospital infants treated with atropine for gastro-enterospasm, without any evidence of parenteral infection, developed atropine fever. None of the cases of pyloric stenosis given atropine developed the fever. He believes that the febrile reaction is due to stimulation of the temperature regulating centres in the brain. The fever usually starts three or four hours after oral or subcutaneous administration, the peak is from six to eight hours, and it subsides when the drug is discontinued.

Late death as a result of cerebral hæmorrhage at birth.

A case of intra-cranial hæmorrhage at the base of the brain in an infant who was born without instrumental aids is presented. Death

occurred on the thirty-fourth day. In discussing the diagnosis the author indicates the importance of intermittent cyanosis in localisation. This symptom is almost pathognomonic of sub-tentorial cerebral hæmorrhage in premature infants. Patients presenting intermittent cyanosis invariably have blood clots around the medulla oblongata if they come to autopsy. Pressure affecting the respiratory or vasomotor centres is put forward in explanation. R. C. Lightwood.

Archives of Pediatrics.

Vol. xlvi, No. 9, Sept. 1929.

*Generalized œdema in association with tetany of the new-born. W. Shannon.

Generalized œdema in association with tetany of the new-born.

Shannon discusses the meaning attached to the term "œdema neonatorum." The text-books and the majority of authors use it to signify a rare disease occurring almost altogether in premature or feeble infants and carrying so high a mortality that little hope can be held for the infant in whom it develops. Certain authorities including Feer recognize œdema occurring in the newly-born as a commoner symptom with a prognosis not necessarily bad. The new-born infant would seem to have a marked tendency to œdema.

Three cases are described to illustrate certain points which the author puts forward in support of the view that symptomatic œdema usually depends on a disturbance of salt metabolism leading to salt and water retention. The salts most concerned are the sodium salts; calcium salts, on the other hand, have an opposite effect. In each case tetany was present and disappeared promptly after the application of calcium and parathyroid therapy. R. C. Lightwood.

Journal of Immunology.

Vol. xvii, No. 1, July 1929.

*The significance of *Brucella abortus* agglutinins in human serum. C. M. Carpenter, R. Boak and O. D. Chapman.

Vol. xvii, No. 3, September 1929.

*The examination of 2,433 human sera for agglutinins of *Brucella abortus*. M. F. Welsh.

The significance of Brucella abortus agglutinins in human serum.

The authors' findings are thus summarized:—

1. Agglutination tests for evidence of *Brucella abortus* infection on the serum collected from 4,050 Wassermann samples in Syracuse, N. Y., showed 7.3 per cent to contain abortus agglutinins. An examination of 955 similar samples collected in New York showed 2.4 per cent to agglutinate a *Brucella abortus* antigen.

2. *Brucella abortus* agglutinins could not be demonstrated in the serum of adults who had been drinking pasteurized milk containing such antibodies.

3. Evidence is submitted to indicate that *Brucella abortus* agglutinins in the blood serum are a result of an active production by the living organism which has invaded the tissues of the body.

4. *Brucella abortus* agglutinins may disappear from human serum very slowly. One serum titre was 1 :405 two years after apparent recovery from undulant fever.

5. Because of the variable antigenic properties of certain strains of *Brucella abortus*, no specific serum titre can be established as diagnostic of undulant fever.

The examination of 2,433 human sera for agglutinins of Brucella abortus.

Of the 2,433 sera tested by Welsh, 2,300 were considered negative, and 133 gave some degree of reaction in the dilutions used. Of this total group 5.46 per cent showed some reaction to the *Brucella abortus* antigen. The literature shows clinical cases of the disease in man where the serum had feeble power of agglutination, and other cases in which the titre of the serum was fairly high, yet the individual was, and had been, in good health. With our present information it is difficult to put an unassailable interpretation on such readings. Further study of the serum reactions, together with the clinical findings, will undoubtedly show the proper correlation between the two.

F. E. T.

Johns Hopkins Hospital Bulletin.

Vol. xlv, No. 2, August 1929.

*Studies on the living blood cells of the new-born. C. E. Forkner.

Studies on the living blood cells of the new-born.

Forkner applied the supravital method of studying living blood cells in the new-born from birth to the eleventh day, and was thus enabled to assign the immature atypical cells to their proper groups.

Polymorphonuclear neutrophilic leucocytes decreased in percentage and absolute values throughout the observations, especially on the first day after birth. The lymphoid cells, on the other hand, gradually increased in percentage from birth to the eleventh day. The absolute numbers, however, decreased somewhat during the first three or four days, after which they steadily increased. Polymorphonuclear eosinophils remained constant, with a slight increase on the third to fifth day, with a rise in percentage values.

The monocytes were high in absolute numbers throughout the first eleven days, and did not participate in the initial decrease of total white blood cells. The monocytes followed neither the lymphoid nor the myeloid-elements in their functions.

Polymorphonuclear basophils maintained a fairly constant percentage (0.5 per cent) throughout, but their total number was highest on the day of birth. Neutrophilic myelocytes and reticulated red blood corpuscles were both elevate on the first day and then decreased rapidly.

The total number of red blood corpuscles decreased until about the fourth day, with a slight rise at the end of the first week and then decreased again on the tenth day. This was in contrast to the hæmoglobin

values which increased about the fourth day, dropped rather rapidly to the seventh day and then subsided very gradually to the eleventh day.

The proteins of the blood serum increased gradually from 6.75 per cent to 7.65 per cent throughout the first eleven days, but only slightly during the first four days.

The number of blood platelets was greater on the day of birth than at any other time, but remained rather constant. F. E. T.

Surgery, Gynecology and Obstetrics.

Vol. xlix, No. 1, July 1929.

*Carcinoma of the fundus of the uterus. L. J. Stacey.

The influence of treatment with hypertonic sodium chloride solutions in patients with acute abdominal lesions. R. S. Anderson and R. Rockwood.

Panhysterectomy technique. J. F. Baldwin. (Correspondence).

Vol. xlix, No. 2, August 1929.

*Endometriosis in uterine cornua. M. Douglass.

*The morphology of normal menstrual blood and its diagnostic value. S. N. Geist.

*Thyroid tissue tumours of the ovary; with the report of an apparently toxic case. G. L. Moench.

End-results of transplantation of the ureter. C. M. McKenna.

*X-ray studies of the mechanism of labour with special reference to puerperal infection. D. H. Bessesen and A. N. Bessesen.

The significance of the ureter in surgery. J. R. Caulk.

Susceptibility to cancer. W. J. Mayo. (Editorial).

Vol. xlix, No. 3, September 1929.

*Benign tumours of the female breast. G. Van S. Smith and G. A. Marks.

*Fibromyoma of the uterus in relation to pregnancy; with report of cases. R. H. Harris.

*The histogenesis of adenomyositis. G. L. Moench.

Uretero-ureteral anastomosis. W. S. Bump and S. M. Crowe.

Actinomycosis of the urinary tract. R. E. Cumming and R. J. Nelson.

*Extirpation of the uterus by the vaginal route. P. Werner.

Technique of breech delivery. E. L. Cornell.

*Separation of the symphysis pubis. J. G. Wishner and L. Mayer.

Carcinoma of the fundus of the uterus.

Stacey finds that although carcinoma of the fundus occurs most commonly after the menopause it is fairly common in women less than 45 years of age, having occurred in 10.51 per cent of the cases in the series reported.

Metrorrhagia was the most common symptom and was the first symptom noted by 63.66 per cent of the patients in this series.

Uterine myoma occurs more than three times as often in women with carcinoma of the fundus of the uterus as in women without carcinoma of of the fundus of the uterus. The symptoms may be attributed to the myoma and may cause a delay in the making of a diagnosis of malignancy.

Every patient having metrorrhagia or an abnormal vaginal discharge should be examined thoroughly to determine the cause of symptoms irrespective of age, and if the symptoms warrant it and the patient is not a poor surgical risk, hysterectomy should be done even if malignancy is not found by curettement.

The greatest number of the patients who died following operation for carcinoma of the fundus died during the first three years of local recurrence.

More five-year arrested cases result from operation for carcinoma of the fundus of the uterus than from operation for carcinoma in other commonly affected organs.

Endometriosis in uterine cornua.

Douglass finds that adenomatous lesions of the uterine cornu occur frequently in association with the form of inflammatory disease of the tube known as salpingitis isthmica nodosa and may be demonstrated *at the time* of salpingectomy. It seems unlikely that they arise commonly after salpingectomy from implantation or outgrowth of traumatized tubal or uterine mucosa. While infection may be an etiological factor in the production of cornual adenomata, the severity of the associated inflam. matory process is variable.

Adenomatous structures, except for parovarian tubules, are seen infrequently in normal uterine cornua. The morphology of cornual adenomata varies widely, and response to the menstrual stimulus in the form of bleeding is uncommon.

The morphology of normal menstrual blood and is diagnostic value.

In menstrual blood Geist finds a definite number of elements which are so characteristic and stable as to enable him to differentiate with certainty menstrual blood from blood of other types of genital bleeding. This fact is of value in that it gives us an additional diagnostic aid in pelvic diseases accompanied by hæmorrhage.

Thyroid tissue tumours of the ovary ; with the report of an apparently toxic case.

Moench considers it unlikely that struma ovarii is so rare as the relatively few cases would indicate. He records three cases in detail and in view of these three cases, especially the last one, which seems to have contained actually functioning thyroid tissue, denies Bauer's assumption that cases of struma ovarii are really pseudomucinous ovarian cysts or even cystadenomata ovarii at all. They are teratomata, perhaps not so rare as commonly supposed, but extremely rare as far as actual functioning of the thyroid tissue is concerned, this being only the second tumour described in the literature in which the assumption of functionally active thyroid tissue in an ovarian teratoma seems really justified.

X-ray studies of the mechanism of labour with special reference to puerperal infection.

The mechanism of labour has been suggested as an etiological factor in puerperal infection, and to confirm this opinion the Bessenens have made a study of the relation of the uterus to the pelvis and of the presenting part of the cervix, by the introduction of a clip into the anterior lip of the cervix and the exposure of X-ray films during the period of

contraction, and again during the relaxation immediately following. These films show descent of the uterus within the pelvis and of the fœtal presenting parts within the uterus during contraction—with ascent of the uterus within the pelvis and ascent of the fœtus within the uterus during the period of relaxation immediately following.

Benign tumours of the female breast.

In this clinical and pathological study of 201 cases treated between 1875 and 1929 at the clinic of the Free Hospital for Women, Brookline, Massachusetts, benign breast tumours are discussed and a résumé of the 201 cases is given.

Fifty-five per cent of the series had never nursed. It is not known how many of those who had children did not nurse.

The majority of the periductal fibroma cases were under 30 years of age when symptoms were noticed. All of the fibro-adenoma cases were under 35. Most of the papillary cystadenoma and chronic cystic mastitis patients were over 35.

Abnormality of menstruation was complained of by 42.3 per cent of those who had not passed the menopause. Eighteen per cent of the series were near, at, or had passed the menopause when symptoms began. Changes in the affected breast or breasts associated with menstruation were noted by 13.7 per cent.

Discharge from the nipple was complained of by 14.2 per cent of the papillary cystadenoma cases and 8.8 per cent of the chronic mastitis cases.

The duration of symptoms bore no relation to the extent or seriousness of the lesion. Sarcoma was found at the primary operation in seven per cent of the periductal cases. Carcinoma was present in 28.5 per cent of the papillary cystadenoma group and in 1.7 per cent of the chronic mastitis cases. Thus ten, 4.9 per cent of the whole series, had associated malignant breast disease at the primary operation. Three patients (one of the fibro-adenoma class and two of the mastitis group) had breast carcinoma at a later date. These make 1.9 per cent of the traceable cases.

Bilateral involvement occurred in 13 per cent of the periductal cases and in 35.2 per cent of the chronic cystic mastitis cases.

Later benign breast disease occurred as follows: periductal (21 per cent of the whole group had had one breast amputated at the first operation), 21.2 per cent; fibro-adenoma (12.5 per cent had had one breast amputated), 25 per cent; papillary cystadenoma (64.2 per cent had had one breast amputated), 10 per cent; chronic cystic mastitis (36.8 per cent of the group had had one breast amputated at the first operation), 27.7 per cent. Possibly the high percentages of recurrence are accounted for by insufficient removal of tissue at the primary operation.

The difference between normal and pathological breast tissue is extremely difficult to define even when a lump is present grossly. Probably many pathological breasts are unnoticed or neglected (for example abnormal tenderness or a diffuse chronic mastitis with slight induration) until a lump appears. This will be benign in 49 instances and malignant in 51, depending on the presence or absence of the unknown biological factors that are associated in cancer production.

The benign breast tumours have a close pathological relationship to each other. Not only are they associated with the whole cycle of ovarian

and reproductive life, but more especially with lack of normal breast function and with involution—factors which result in stasis and lack of drainage.

Fibromyoma of the uterus in relation to pregnancy; with report of cases.

There are manifold relations between fibromyomata of the uterus and pregnancy which concern surgeons and obstetricians. Statistics of sterility caused by fibromyoma of the uterus if they are to be accurate must consider such factors as desire not to have children, widowhood, menopause, and disease of adnexa. Pregnancy and delivery may progress satisfactorily in the presence of a large uterine fibromyoma. Uterine hæmorrhages, breech and transverse positions of the fœtus, high fœtal mortality, stasis in the urinary and intestinal tracts, and sepsis, are among the important effects of fibromyomata complicating pregnancy, labour, and the puerperium. Diagnosis may involve great difficulty when early pregnancy is present in a fibro-myomatous uterus or when a large, soft fibro-myoma simulates pregnancy. Myomectomy is often followed by pregnancy in married women less than 40 years of age who are desirous of having children but are sterile on account of fibroids.

Patients for myomectomy should be carefully selected, and the right to do hysterectomy should be reserved by the surgeon, for radical operation may be necessitated by malignancy of tumours, disease of adnexa, or by impossibility of leaving a uterus safe for pregnancy. Myomectomy during pregnancy may be required because of degeneration, torsion, impaction, or the large size of the fibromyomata. Hysterectomy during pregnancy is seldom necessary, and should be done only when myomectomy cannot save the patient from accidents due to the tumour, or when there is infection or malignancy of the tumours. Women who have uterine fibromyomata of large size and have never been pregnant are often sterile for other reasons than the presence of the tumours.

The histogenesis of adenomyositis.

After discussing fully the various theories which have been held with regard to the histogenesis of adenomyositis, adenomyosis and endometriosis, Moench concludes that apart from the direct invasion of tissues by the endometrium or endosalpinx, the serosal origin of adenomyositic lesions is to be accepted for most cases. In some rare instances (depending on the location and the amount of muscle tissue present), he believes that it is necessary to assume misplaced embryonal remnants of the muellerian system to be the origin. That transplanted endometrial tissue may at times produce endometriosis cannot be directly denied, but such cases are probably rare. Further, this last source of origin is not necessary to explain the hitherto reported cases of adenomyositis.

Extirpation of the uterus by the vaginal route.

Professor Werner of Vienna stresses the advantages of vaginal extirpation of the uterus over extirpation by laparotomy and considers that many operators choose the abdominal method in cases which should be operated on by the vaginal route, the reason being chiefly in the fact that the technical difficulties of the vaginal operation are often overestimated.

The indications for this operation are numerous, and if confined to the

extirpation of the uterus alone without the adnexa, include cases of hæmorrhage, especially in climacteric women, in adenomyosis uteri, cancer of the uterus, certain cases of post-partum atony, septic abortion and similar conditions.

There are two typical methods for extirpation of the uterus—"from the parametria" and "from the corpus" respectively. In the former the parametria are first tied off, then gradually proceed to tie off the tissue against the adnexa until the uterus is extirpated. In the second method he begins by turning forward the corpus uteri through the anterior colpocœliotomy wound, amputates the adnexa, and then ties off the parametria and cuts through the posterior wall of the vagina. He calls this method "from the corpus." The advantage of the first method is that technically it is undoubtedly much easier; its disadvantage that with the turning forward of an enlarged uterus the ligatures formerly placed on the parametria are easily stripped off, and this may cause a hæmorrhage. The second method avoids this danger as the parametria are tied off last; and another advantage is that if the operator becomes aware during the operation that it is not necessary to remove the uterus, he can save the organ entirely or in part. Yet the second method is considerably more difficult to do than the first, and the stripping of the ligatures can be avoided by careful tying.

Separation of the symphysis pubis.

Wishner and Mayer's conclusions from a study of five typical cases of post-partum separation of the symphysis pubis and a sixth case of probable fracture of the pubic spine resembling the others in symtomatology, are the following:

1. Post-partum separation of the symphysis pubis is comparatively frequent.

2. The syndrome is so typical as to make its recognition easy. The chief symptoms are pain in the region of the pubic bones, palpable separation, difficulty in walking and usually a typical waddling gait.

3. Separation of the symphysis pubis is invariably accompanied by a corresponding gaping of the anterior portion of one or both sacro-iliac joints. The lump is due chiefly to the instability of the pubic arch and to the weakness of the sacro-iliac joints, in less degree to the posterior displacement of the hip joints which instead of facing anterolaterally, face laterally.

4. The treatment must correct all three pathological lesions. This can be accomplished by applying a powerful compressive force to the pelvis which gradually rotates the innominate bones from behind, forward and mesially thus closing the gaping sacro-iliac joints and bringing the pubic bones into normal alignment.

5. Functional cure is possible even though a slight persistent separation of the symphysis pubis is roentgenologically demonstrable.

F. E. T.

The Journal of the American Medical Association.

Vol. 93, No. 1, July 6, 1929

Visceroptosis. E. L. Bortz.

Vol. 93, No. 2, July 13, 1929.

*The screw curet. H. H. Young.

Unusual congenital deformities of the upper extremities: Absence of the radii with oligodactylia. W. N. Lackey.

Vol. 93, No. 3, July 20, 1929.

*Neurogenic vesical dysfunction in infancy and childhood. M. F. Campbell.

Peritonitis and peritoneal immunity. (Editorial).

Vol. 93, No. 4, July 27, 1929.

*Ovarian responses: differences elicited by treatment with urine from pregnant women and by freshly implanted anterior lobe. E. T. Engle.

Vol. 93, No. 6, August 10, 1929.

*Early diagnosis of pregnancy. M. Douglass.

*Hæmoperitoneum from traumatic rupture of corpus luteum. F. Christopher.

Vol. 93, No. 8, August 24, 1929.

*Anæmia in pregnancy with recovery: report of fifty cases. P. B. Bland and L. Goldstein.

Vol. 93, No. 9, August 31, 1929.

*Anterior pituitary hormone in the blood of women with ovarian deficiency. C. F. Fluhmann.

Vol. 93, No. 11, September 14, 1929.

*Labour in the elderly primiparæ: factors in prognosis. M. Schultze.

*Human ova from the uterine tubes: results of new method of isolating specimens. J.P. Pratt, E. Allen, Q. V. Newell and L. J. Bland.

*Shock in obstetrics: treatment with intravenous injections of acacia. L. M. Randall.

Congenital pyloric obstruction. (Editorial).

Vol. 93, No. 12, September 21, 1929.

*Control of impetigo neonatorum: advisability of a radical departure in obstetric cases. E. T. Rulison.

Treatment of carcinoma of the cervix. (Current comment).

Vol. 93, No. 13, September 28, 1929.

*Obstetrics and gynecology in general practice. C. H. Davis.

A soya-bean food preparation for feeding infants with milk idiosyncrasy. L. W. Hill and H. C. Stuart.

Genesis of icterus neonatorum. (Editorial).

The screw curet.

Young describes a set of new curets based on the principle of the screw which have proved of value in the curettage of fistulous tracts, especially the small or "pin-point" urinary fistulæ, in many cases. They can be used with facility and accuracy in the removal of granulations lining the entire length of a small fistulous tract. In the excision of fistulous tracts, both to show the position of the lumen and to afford traction, they are helpful. By their use, long, small fistulous tracts may be resected with facility.

Neurogenic vesical dysfunction in infancy and childhood.

Campbell presents a study of twenty cases of neurogenic vesical dysfunction in infants and children, with autopsy findings in eight. He considers the neurogenic disease under two headings: (1) the central

nervous system (brain and spinal cord), and (2) the peripheral nerves supplying the bladder. In some of the cases it was not possible to demonstrate actual neurological disturbance as determined by isosegmental sensory or motor changes. Chronic pyuria and incontinence are the outstanding symptoms of these cases. In the examination of these patients, urinalysis, chemical examination of the blood, renal function tests, abdominal palpation, rectal examination, urography and cystoscopy reveal the nature and extent of the lesion. Treatment is most unsatisfactory and the attainment of a cure most unlikely, and the patients are often not seen until renal injury and infection are extreme. In cases with large amounts of residual urine the indwelling urethral catheter may be employed. In the urinary retention type periodic catheterization three or four times a day offers the best treatment. Internal medication may afford some relief from symptoms due to infection. In the less severe cases, those manifested clinically by marked enuresis or partial incontinence, the parasympathetic neuro function of vesical emptying may be inhibited, partially at least, by atropine. If the nerve lesions are marked, however, such drug therapy is of no value.

Ovarian responses: differences elicited by treatment with urine from pregnant women and by freshly implanted anterior lobe.

Previous work has shown that the daily transplantation of anterior lobe into immature female mice results in a marked follicular growth followed by ovulation.

Treatment of immature female mice with the urine of pregnancy results in follicular growth, with atresia of follicle and ovum, and effective prevention of ovulation by the transformation of the follicle into a corpus luteum with retained ovum.

It is difficult to consider the two types of response as beng due to the same factor from the anterior lobe.

Early diagnosis of pregnancy.

Douglass finds that in the vast majority of cases within a week or ten days after the first missed period, a slight resilience or elasticity of part of the fundus may be felt on manual examination. The vaginal finger moves its way, step by step, advancing up the anterior uterine wall. By careful palpation through the bladder, the uppermost point of the cervix is felt, above which is the slight depression marking the site of the future lower uterine segment. This is the forerunner of Hegar's sign. The upper part of the uterus may feel hard, firm and "like a potato," but immediately below on the front of the fundus uteri the rubbery elasticity may be made out extremely early.

If the finger is pressed firmly into the uterine musculature at this point or just above, it may be felt by the examiner to be making an indentation or depression in the musculature beneath its palmar surface. If the finger is moved to the side and returned to the original point of pressure, the depression made by the finger may be felt clearly to persist in the uterine musculature. The impression is that of "pitting œdema." Under ordinary circumstances this effect cannot be reproduced at all on normal non-pregnant uterine musculature.

There is no evidence that this sign has any bearing on the site of

implantation of the ovum. Douglass claims that this is a reliable sign of early gravidity and that it frequently occurs when there are no other signs in the uterus which might make a diagnosis possible.

Hæmoperitoneum from traumatic rupture of corpus luteum.

Twelve hours previous to her admission to hospital, a married woman aged 28 years accidentally fell, striking the lower right quadrant of the abdomen against the arm of a chair. She did not experience any pain at the time but three hours later began to have abdominal distress. There was vague generalized pain, which was most marked over "the pit of the stomach." A few hours later she began to feel very faint and the pain became severe. When seen at 3 a.m. the abdomen was very tender throughout, but especially in the right lower quadrant. There was slight rigidity. The urine was normal. The leukocyte count at 3 a.m. was 13,000 and at 5 a.m. was 19,000. A diagnosis of acute appendicitis was made and the patient was taken to hospital.

At 7.30 a.m. next morning, the abdomen was opened through a muscle-splitting incision. About 500 c.c. of fluid and clotted blood was found in the abdominal cavity. The appendix was normal. The incision was extended and a bleeding point was found on the right ovary at a ruptured corpus luteum. The bleeding was readily controlled by suture of the ovary. The appendix was removed. The post-operative course was uneventful.

Hæmoperitoneum from spontaneous rupture of a corpus luteum is not uncommon, but the cases in which this rupture is definitely associated with trauma are exceedingly rare. Jaffe reported a case of traumatic rupture of a malignant ovarian cyst in 1927, but a search of the literature of the last ten years reveals no similar case.

Anæmia in pregnancy with recovery: report of fifty cases.

Of fifty patients showing anæmia in pregnancy, with a hæmoglobin varying from 42 to 78 per cent and erythrocyte counts from 2.30 to 3.98 million cells per cubic millimetre, forty-six, or 92 per cent, made a spontaneous recovery within six months after delivery.

Anterior pituitary hormone in the blood of women with ovarian deficiency.

The process of ovulation which is set up in the ovaries of an immature white mouse by the implantation of anterior pituitary gland tissue has also been elicited by the injection of blood serum from a number of patients with an operative or radiation castration. They occurred as early as eight days and as late as thirteen years following total extirpation of the ovaries. It was also found in three patients complaining of irregular menstruation.

Of seventeen patients with functional amenorrhœa, six showed anterior pituitary hormone in the blood, but in four cases the ovaries of the test animal gave the "luteinization" reaction.

It is hoped that the use of tests for the presence of anterior pituitary hormone in the blood of patients may prove of clinical assistance in the diagnosis and treatment of certain conditions which manifest themselves by periods of amenorrhœa and other menstrual disturbances.

Labour in the elderly primiparæ: factors in prognosis.

There is no unanimity of opinion as to what constitutes the upper limit of youth from the obstetric standpoint, various authorities placing it at any point between 25 (Fassbaender) and 35 (Mangiagalli). Schultze accepted the opinion of the majority, who place it at 30 years, and included in the present study all women who had their first babies after reaching the thirtieth year. There were 337 such women, or 4.5 per cent of 7,500 deliveries. They formed 11.3 per cent of 2,992 primiparæ in the series. Of the 337 women, 231 were between 30 and 35 years of age; eighty-five between 35 and 40, and twenty-one from 40 to 45 inclusive. Only eight women were over 40: two of these were 41, three were 42, two were 43 and one was 45.

Schultze finds that the dangers and difficulties of labour in elderly primiparæ have been somewhat exaggerated. Speaking generally, neither fœtal nor maternal mortality is increased above levels generally accepted as normal and the average duration of labour is only slightly prolonged. About 20 per cent of the women have strikingly rapid and easy labours.

Dystocia may be expected in about 15 per cent of the cases but is usually dependent on complicating factors rather than on age alone. A careful consideration of the patient will usually enable one to make a fairly accurate prognosis even before labour starts. Abnormal presentations and contracted pelves, both of which are more frequent than in younger patients, increase the necessity for operative intervention and with it the danger to both mother and child. A woman beginning labour with the head engaged in a normal pelvis in an occipito-anterior presentation has little likelihood of difficulty. If she has good pains, her likelihood of having dystocia is almost negligible.

The most important single factor in prognosis, however, is the quality of the uterine contractions, and this unfortunately cannot be accurately prognosticated until after labour has set in. It is known that the frequency of inadequate pains increases with advancing age and it is probable that a consideration of the physical type of the patient and of her history, such as that of a previous long-standing sterility, will be of greater importance the more accurately it is observed.

Fortunately, however, the development of the cervical Cæsarean section in recent years makes it possible, without materially increasing the risk to the mother, to await labour, observe the type of uterine contractions and then, if these seem insufficient to carry the patient through successfully, perform Cæsarean section. A rather high percentage of Cæsarean sections will probably always be necessary, especially in the older women and in those with previous long-standing sterility, for the greatly increased value of the child in these cases makes it desirable to minimize fœtal risk.

Human ova from the uterine tubes: results of new method of isolating specimens.

The authors employed two methods to obtain living ova. In the first method, when the Fallopian tubes were not to be removed, the uterus was compressed by uterine elevating forceps applied just above the cervix. A small needle with a syringe attached was then introduced through the muscle into the cavity of the uterus. Salt solution was then injected into the cavity and allowed to run out through the Fallopian tubes. One Fallopian tube was compressed with the fingers while the other was being

washed. The fluid was collected as it ran out the fimbriated ends and was carefully searched for ova. This method is also useful to test the patency of the Fallopian tubes.

In the second method, when the Fallopian tubes were removed at operation they were first dissected free from the mesosalpinx. A small cannula was fixed in the fimbriated end of each Fallopian tube and then washed with physiological solution of sodium chloride. The washings were then examined for ova. Freeing of the Fallopian tube seemed necessary, as otherwise there might have been a kink which would have interfered with successful washing.

Nine specimens were recovered from the uterine tubes, five of which were definitely proved to be ova.

Ovulation, dated from the onset of the previous menstruation, preceded the sixteenth day in one case, the fifteenth day in three cases and the fourteenth day in one case. These data further confirm the observation, based on the condition of the corpus luteum, that ovulation occurs most frequently at the middle of the intermenstruum.

Shock in obstetrics: treatment with intravenous injections of acacia.

Fourteen women with shock and hæmorrhage during and after delivery have been treated with intravenous infusion of solution of acacia in the Mayo Clinic. In each instance, definite benefit has occurred and no untoward effect has resulted. In several cases life has been saved by the early use of solution of acacia and by the postponement of operative procedures until the initial shock has been controlled. The total number of patients in all services at the Mayo Clinic who received intravenous injections of solution of acacia in 1928 was 118.

Experience would indicate that this solution has definitely established itself in the treatment of shock. Any medication that has proved of distinct value and is as easily available as acacia should be employed more extensively. As an advocate of its use, Randall does not propose any rivalry between blood and solution of acacia. Blood transfusion has proved its merit in cases of shock and hæmorrhage. The need in shock is for fluid that will remain in the circulation, and not for erythrocytes. Larger amounts of fluid than can be obtained from a single blood transfusion from a single donor often can be given with benefit. Acacia apparently fulfils all the requirements for intravenous treatment of shock except furnishing erythrocytes. It has been proved to be innocuous in several series of cases. It increases the volume of plasma and blood and keeps it increased until the normal fluid-regulating mechanism of the body is restored. As preventive of shock it is often well to give an injection of solution of acacia in cases in which the patient is fatigued or debilitated and in which obstetric operations are to be performed.

Control of impetigo neonatorum: advisability of a radical departure in obstetric cases.

To insure against epidemic neonatorial infections in the obsteric divisions of general hospitals, Rulison considers there should be small nurseries with individual baby units, and the adoption of a revised scheme of nursing whereby nurses are responsible for the care of a limited number of mothers with their babies.

Obstetrics and gynecology in general practice.

To obtain better medical care for women Davis considers the following conditions essential :—

1. Government activities should be directed toward a careful survey of the causes of maternal and infant deaths in the United States, and an investigation of the methods that may be adaptable to various local conditions.

2. Medical students who go into general practice after graduation require a more adequate clinical training in obstetrics. Greater freedom in the selection of courses during the senior year may be necessary, unless the entire curriculum is planned on a basis of requirements for general practice.

3. More institutions are needed in which physicians who wish to specialize in obstetrics and gynæcology may obtain the necessary training.

4. There is a great need for graduate nurses who may qualify as midwives to work in conjunction with the medical profession in the care of a large group of women who are unable to pay for adequate obstetric service under existing conditions. A nurse-midwife service, if sufficiently developed, might lead to a marked decrease in the maternal mortality rate of the United States.

F. E. T.

La Gynécologie

June, 1929.

*Ovarian transplantation : indications, technique and an analysis of his results. Serdukoff.

Description of a new apparatus for the injection of lipoidol into the uterus and Fallopian tubes. Petit-Dutaillis.

Ovarian transplantation: indications, technique and an analysis of his results.

Serdukoff gives a historical review of ovarian grafting. He considers homotransplantation impracticable in Russia. He points out that the use of human ovaries after panhysterectomy for cancer as practiced by Sippel in Bumm's clinic is dangerous because of the risk of transplanting tissues containing secondary growth. He also strongly disapproves of commercial transactions in genital glands as occasionally practiced in America and considers the ovaries of still-born fœtuses useless. For these reasons he has been led to employ hetero-transplantation from the sheep, preferably one about two years old which has been pregnant, or else using a monkey. Most of his cases had been subjected to long courses of organotherapy without any improvement and had been sent from his own province, Archangel, Vladivostok, Leningrad and other towns. His cases showed some swelling in the region of the implantation within three days and the appearance of an urticarial rash on the legs from 24 to 48 hours later spreading to the chest and accompanied by labial herpes and lasting three days. Menstruation appeared 10 to 14 days after the operation. Later results showed definite improvement in 75 per cent of his cases, with loss of headache and lassitude and improved memory and interest in work. Menstruation continued from three to five years in the case

of infantile genital development but not following ovariotomy where grafting has to be repeated after six to twelve months. At this time the grafts cannot be felt on palpation. In conclusion he considers that the operation stabilizes endocrine function and regulates genital function in women.

R. H. B. Adamson.

Gynécologie et Obstétrique

Vol xix, No. 2, 1929.

*Rhabdomyosarcoma and columnar celled carcinoma of the uterine body. "Dysembryoma" of the right ovary (Dermoid cyst). Reeb and Oberling.

*Concerning six cases of rapid evacuation of the uterus under spinal anæsthesia. Balard and Mahon.

*What part can be attributed to syphilis in the etiology of albuminurias reputed "gravidarum"?. M. Rivière.

Bony malformations in exencephalic and pseudencephalic and anencephalic monsters. Sloboziano, Georgesco and Herscovick.

Rhabdomyosarcoma and columnar celled carcinoma of the uterine body. "Dysembryoma" of the right ovary (Dermoid cyst).

This seems to be a genuine case of two concurrent malignant growths. A description, macroscopic and microscopic, of both types of growth is given and also histological drawings. The author concludes that a discussion as to whether the two growths are entirely independent or whether the one owes its genesis to the other (and if so, which?) is futile in the present state of our knowledge.

Concerning six cases of rapid evacuation of the uterus under spinal anæsthesia.

Balard and Mahon believe that there is a limited scope for this operation in cases in which rapid emptying is desirable; prolapsed cord where the baby is in poor condition; (they prefer Cæsarean section if the baby is in good condition); premature placenta prævias with much fœtal stress, unless the low maternal blood pressure contra-indicates spinal anæsthesia; maternal toxæmias with raised blood pressure may offer a wider scope if indications for early delivery exist. In all cases there is a considerable risk of extensive cervical tears.

What part can be attributed to syphilis in the etiology of albuminurias reputed "gravidarum?"

Riviére believes that about one quarter of the cases are syphilitic, but, in common with most French obstetricians, he is very easily persuaded to diagnose syphilis.

R. A. Hendry.

Revue Francaise de Gynécologie et d'Obstétrique.

December, 1928.

*The present methods of exploration and of diagnosis in gynæcology. J. Guyot.

*The modern treatment of puerperal infection. J. Andérodias.

January, 1929.

*My present experience of the method of Delmas. A study of eight cases. V. Le Lorier.

*some cases of accouchement with dystocia under spinal- anæsthesia. M. Metzger.

Rapid accouchement by manual dilatation of the cervix under spinal anæsthesia for tuberculous laryngitis. V. Cathala.

Death from embolus on the operating table. F. Jayle.

Vaccinotherapy in gynæcology. L. M. Pierra.

February, 1929.

*The diagnosis and treatment of sterility in the female. A. Hamant.

*The treatment of dysmenorrhœa, sterility and amenorrhœa by intubation of the uterus (the intra-uterine stem). B. Selhorst.

Reflexions on the protection of the perineum. R. Keller.

March, 1929.

*Auto-vaccinotherapy in puerperal gonorrhœa. J. Auderbert and J. B. Giscard.

The treatment of eclampsia by somnifene. A. Laffont and J. Larribére.

*Grave trauma during delivery. M. Reeb.

*Tetanus of the new-born. H. Rocher and Rudeau.

*Uterine gangrene. R. Keller.

Backward displacements of the uterus and treatment by reflexes. J. Ragnault.

April, 1929.

*One year's practice of extemporaneous evacuation of the uterus at the end of pregnancy. P. Delmas.

*My technique of low Cæsarean section by transverse incision of the low segment. F. Jullien.

Heliotherapy in gynæcology. L. M. Pierra.

May, 1929.

*Cancer of the cervical stump after subtotal hysterectomy. G. Jeanneney.

The legitimacy of the method of Delmas in the normal confinement. P. Balard and E. Lacquieze.

Two cases of accouchement by the method of Delmas. J. L. Audebert and E. Estienny.

*Purulent staphycoccal pericarditis treated by vaccines during post-abortional septicæmia. G. Dujol.

Voluminous fibroid of the lower segment and of the cervix in a secundipara; spontaneous accouchement *per vias naturales*. E. Cambon and J. Dor.

*Tubal pregnancy at term with living mother and living child. Daleas and Marric.

The present methods of exploration and of diagnosis in gynæcology.

In a lengthy article Guyot reviews the modern methods of gynæcological diagnosis. He stresses the importance of a careful clinical examination, methodically made. He divides the new methods of exploration into, 1. Information furnished by the laboratory; 2. Methods involving the use of lighted instruments; 3. Radiography without and with pnemo-peritoneum; 4. Gas insufflation of the Fallopian tubes; 5. Radiological examination after the intrauterine injection of lipio-

dol. Under the first heading are included histological, bacteriological and hæmatological investigations. The author points out that in cases of carcinoma of the uterine body microscopic examination is apt to be misleading. In such cases he only regards a positive finding to be of value. He attaches great importance to blood urea estimation in all patients who are to be submitted to Wertheim's operation. If the urea concentration in the blood is higher than 60 mgrs. per 100 c.c. the operation is contra-indicated. The author deplores the failure of the hysteroscope as a useful instrument, but he finds the sigmoidoscope valuable in certain cases. Cystoscopy should always be practised as a preliminary investigation in cases of cancer of the cervix uteri. Reference is made to the value of radiological examination in cases of suspected pregnancy. X-ray diagnosis cannot, in such cases, be made before the fourth month. Sometimes the films show positive evidence of pregnancy although the screen examination is negative. The dangers incurred by the introduction of gas into the peritoneal cavity through the abdominal wall forbid the wide employment of X-rays with pneumo-peritoneum as a means of diagnosis. Fatal cases are on record in which death was due to intestinal injury, to air embolism or to peritonitis. The technique of tubal insufflation is described and the diagnostic and therapeutic values of this operation are reviewed. The section on lipiodol as an aid to diagnosis is of some length. The subject is traced historically from 1913, when Dimier injected collargol into a uterus, to the present time. Guyot mentions the other fluids which have been used and concludes that the only safe substance for the purpose is lipiodol. He injects the fluid under a pressure of 25 to 26 cms. of mercury and employs a luminescent manometer. At a pressure of 40 cms. of mercury he has known lipiodol to enter the venous system of the patient. He performs the operation without anæsthesia but gives the patient a hypodermic injection of morphia one hour before.

The morphological and physiological findings which have resulted from the employment of lipiodol are mentioned. The value of the procedure in the various pelvic affections is discussed. The author stresses the importance of taking a second skiagram 24 hours after the first in cases in which there was a doubt as to tubal patency at the time the first skigram was taken. If the Fallopian tubes are patent lipiodol will be seen in the peritoneal cavity at the second X-ray examination. He further attaches importance to the therapeutic value of lipiodol injection of the Fallopian tubes and to post-operative injections after conservative operations have been performed on the Fallopian tubes. The assistance of the differential diagnosis of pelvic tumours and in the metrorrhagias is then discussed. The article concludes with an account of the dangers of and the contra-indications of lipiodol injections.

The modern treatment of puerperal infection.

Andérodias comments on the small change which has taken place in the puerperal morbidity and mortality rates since the year 1900. Prior to that date there had been a steady fall in both rates which began when aseptic and antiseptic methods came into use. In 1900 the mortality from puerperal infection was 1.5 to two per cent and the morbidity 20 to 25 per cent. Since that date there has been no substantial alteration in the figures. The methods of treatment which were in vogue

ten years ago are then mentioned, after which the author passes to a review of modern measures. These he divides into prophylactic, serum therapy, vaccine therapy, immuno-blood transfusion, chemiotherapy, and surgical treatment.

Besides stressing the importance of the ordinary aseptic measures which should attend the conduct of all confinements he discusses the question of prophylactic serum therapy and prophylactic vaccine therapy during pregnancy, after the vaginal organisms have been identified. He tried the effect of intra-uterine vaccines as a prophylactic measure in cases in which labour has been prolonged or complicated. The results have been encouraging. He is also a believer in the prophylactic adminstration of the arsenobenzene derivatives in all cases of doubtful and complicated confinements. Serum is disappointing, in spite of the numerous attempts which have been made to prepare an effective polyvalent antistreptococcal serum. Vaccines when given subcutaneously are likewise disappointing, but in the clinic of Andérodias attempts have recently been made to increase the local resistance to the streptococcus by the introduction of intra-uterine dressings soaked in streptococcal antivirus. The results recorded are encouraging although the writer admits that little can be expected in cases in which the infection has become generalized before the institution of treatment. Immuno-transfusion he finds quite useless but he has only tried its effects in three cases.

Andérodias dismisses intravenous medication with mercurochrome and the other aniline derivatives as useless and dangerous; but he places great faith in novarsenobenzol. The results of this treatment in the clinic of the Faculty during 46 months from 1924 to 1927 are recorded. Although not always successful, if employed prophylactically after doubtful accouchements, it has a good chance of being successful.

Operative treatment is discussed under the headings of hysterectomy and ligature of, or extirpation of, utero-pelvic suppurating thrombophlebitic veins. Hysterectomy is condemned except in cases of uterine rupture, sloughing fibro-myomata, irremoveable retained placenta products, secondary hæmorrhages which appear from the twelfth to the fifteenth day and which are accompanied by the symptoms of a grave infection, and in cases of intramural uterine abscess. Andérodias favours ligature, and in some cases removal of pelvic veins which are the site of suppurative thrombo-phlebitis. Since the medical treatment of acute peritonitis is associated with a mortality which is greater than 85 per cent laparotomy with drainage is advised for this condition.

The author then considers the treatment he employs in the various types of puerperal infection which he groups under the headings of, vulvo-vaginal infections, uterine infections and septicæmia. For the first of these he advises dressings with gauze soaked in antistreptococcal serum. He is against vaginal douching in such cases for fear of carrying the infection upwards. In cases of uterine infection with retained products or retained lochia he favours drainage of the uterine cavity. He makes no mention of glycerine drainage of the uterus. In cases of septicæmia he is an advocate of fixation abscess in the thigh produced by turpentine.

My present experience of the method of Delmas.

Although he is opposed to the routine use of spinal anæsthesia Le

Lorier has been constrained to try it in the eight cases reported in the article. He has employed spinal anæsthesia in one case of slow dilatation of the cervix, in three cases of fœtal death and rupture of the membranes, in one case of excessive size of the fœtus, once for a neglected shoulder presentation and once for hysteralgia. In the five cases in which the child was alive the result, to the child, was excellent. On the three occasions on which he performed internal version the result was satisfactory to the mothers and to the children. There were three cases of forceps delivery, two of perforation and one of morcellement. One mother died from hæmorrhagic shock the result of uterine inertia. In one case it was impossible to obtain a reasonable degree of dilatation. The author thinks that spinal anæsthesia is of great assistance in manual dilatation of the cervix.

Some cases of accouchement with dystocia under spinal anæsthesia.

Metzger records his experiences of spinal anæsthesia in five cases. He does not commend this method for use in obstetric practice and feels little inclined ever to use it again. While admitting the excellent perineal relaxation which it gives he is doubtful about the effect upon the uterus, both on the cervix and on the body. The corporeal hypertonia produced by spinal anæsthesia is of value only when there is concomitant rapid dilatation of the cervix. Spinal anæsthesia does not, in Metzger's opinion, hasten dilatation in cases of rigid cervix. The hypertonia of the musculature of the uterine body makes the operations of forceps delivery and version difficult, almost impossible, because of the way in which the hypertonic uterus moulds itself around the fœtus. This difficulty was met by the author in the cases in which he reports. The gravest danger of all, however, is that of secondary hæmorrhage some days after labour and when the effect of the anæsthetic wears off. This phenomenon is due to the inhibition of thrombosis in the sinuses by the abnormal retraction produced at the time of delivery by intrathecal stovaine. The uterus in these cases does not begin to relax again until the fourth day after delivery and it is at this time that hæmorrhage is liable to occur.

The diagnosis and treatment of sterility in the female.

Hamant in a long article discusses the causes of sterility laying emphasis on the male conditions of azoospermia, oligospermia and necrospermia. The female lesions are grouped topographically and under "tubes" he gives his views on gas insufflation and lipiodol injection. He always carries out the former procedure, reserving the latter for cases in which the Fallopian tubes are found to be impermeable. If air does not enter the Fallopian tube at the first attempt this should be repeated after an interval of a few minutes. The cause of success after primary failure is often due to spasm of the Fallopian tube wall.

Hamant finds that in 40 per cent of cases the Fallopian tubes are found to be permeable at the first attempt, in 20 per cent they are found to be permeable on repetition, in 15 per cent they are relatively impermeable (e.g. one tube is patent only) while in the remaining 25 per cent they are impermeable. The risks of tubal insufflation with gas are infection, tubal rupture, gas embolism and gas infiltration of the broad ligaments or of the abdominal wall. Rupture cannot occur if the pressure is not raised

above 150 mm.Hg. Insufflation has a definite therapeutic value separating recent and feeble adhesions, correcting small twists and dislodging plugs of mucus. Hamant estimates that insufflation renders patent 28 per cent of Fallopian tubes which were previously blocked. The injection of lipiodol possesses certain disadvantages, being rather more difficult, requiring more elaborate apparatus and associated with a slightly greater risk. For these reasons the author uses lipiodol only as a means of demonstrating the site of obstruction in Fallopian tubes which have already been shown to be impermeable by gas insufflation. An account of the surgery of the Fallopian tubes follows with the indications for the various operations. The article concludes with a paragraph on artificial insemmination.

The treatment of dysmenorrhœa, sterility and amenorrhœa by intubation of the uterus (the intra-uterine stem).

After reviewing at length the literature relating to the treatment of dysmenorrhœa by the use of intra-uterine stems the author describes how he has obtained uniformly satisfactory results in this condition and in sterility with his own instrument. This is made of glass, reaches only just above the level of the internal os uteri and is kept in situ for six to eight weeks by stitches which pass transversely through the cervix. He does not appear to have had any complications due to infection.

Auto-vaccinotherapy in puerperal gonorrhœa.

The authors have previously treated 81 cases of gonorrhœa, resistant to other methods of treatment, by auto-vaccinotherapy and claim to have cured 95.5 per cent of their patients. In this article they add two cases of gonorrhœa during the puerperium and one of gonorrhœa during pregnancy. The two former patients had arthritic complications. All these were rapidly cured. The technique depends upon giving a pure gonococeal vaccine prepared from the organisms isolated from the individual patient. In one case the vaccine was prepared from a purulent effusion into the knee-joint. The culture should be kept for three to five days in order that the vaccine may contain not only the organisms but also their soluble toxins. The resultant vaccine is therefore both anti-bacterial and anti-toxic. Moreover the organism takes on a typical form in old cultures and these forms add to the power of the vaccine. The largest dose, towards the end of the course, should be from 15 to 20 million organisms.

Grave trauma during delivery.

The case recorded was one in which a practitioner in attempting the manual removal of a placenta passed his hand through the posterior vaginal fornix into the peritoneal cavity, and erroneously believing his hand to be in the uterus, endeavoured to remove what he thought was placenta but what subsequently proved to be the sigmoid colon. At laparotomy, which was performed immediately the patient was admitted to hospital and three and a half hours after delivery of the child, a large tear was found in the posterior vaginal wall while the sigmoid colon had been torn away from the meso-sigmoid. The case was treated by total hysterectomy, resection of the sigmoid colon with end to end anastomosis and left inguinal colostomy. Ten days later the patient developed a left uretero-vaginal

fistula for which nephrectomy is contemplated. In commenting upon this and other similar cases, the author gives it as his opinion that such accidents are due to a lack of knowledge of the anatomy of the post-parturitional genital canal. The hand can easily be forced through the softened vaginal wall without the exercise of undue force and having made its way through seizes what it meets, whether that be intestine or uterus. The consistence of the parturient uterus to the inexperienced, is not very different from that of the placenta. The remedy lies in a longer apprenticeship in the service of a large maternity hospital. The state should demand longer and wider obstetrical study.

Tetanus of the new-born.

Rocher and Rudeau record 16 cases of tetanus neonatorum. Four of the patients recovered. The earliest signs are inability to suck, due to trismus, and to swallow, due to spasm of the pharyngeal muscles. With these, there is associated inflammation of the stump of the umbilical cord. The facies soon becomes typical and the contractures spread to the limbs. The diagnosis is easy. Confusion should not arise between tetanus and traumatic or infective meningo-encephalitis because of the absence of trismus and convulsions in the latter conditions, the evolution of which, is moreover, totally different. Asepsis and antisepsis have almost caused the complete disappearance of the disease in the large maternity services, but it is still of frequent occurrence in the colonies. The authors advise that, in order to render the development of tetanus neonatorum less probable, expectant mothers in hot countries should be given tetanus antitoxin while the infants should receive similar treatment at birth. When once established tetanus must be treated vigorously and rapidly. The writers give antitetanic serum in doses from 120 c.c. to 440 c.c. by the subcutaneous, the intramuscular or the intrathecal route. Chloral hydrate is given concomitantly (one gramme per diem in two doses) as an antispasmodic with sodium bromide or potassium bromide. The prognosis is always very grave. Notes of 16 cases collected by the authors are given. The disease was fatal in all but three of these.

Uterine gangrene.

The case was one of uterine gangrene due to infection with bacillus perfrigens and bacillus coli and following miscarriage at the fourth month. The patient was treated by total hysterectomy but died a few hours after operation. The excised uterus showed the changes typical of gas gangrene.

One year's practice of extemporaneous evacuation of the uterus at the end of pregnancy.

A considerable part of a rather long article is devoted to a vigorous defence of the author's subject in answer to his numerous critics. He concludes by giving the results obtained during the twelve months which have elapsed since his former communications to the medical periodicals. These are as follows. Out of 700 accouchements spinal anæsthesia was used in 40, that is in a little more than five per cent of the cases. The procedure was used 15 times for premature labour with pelvic contraction, eight times for amniotic infection, six times for placenta prævia, twice for prolapse, twice for excessive size of the fœtus, twice for grave toxæmia,

and once each for eclampsia, brow presentation, fœtal distress, habitual death of the fœtus and "hyposystoly." 15 of the patients were primiparæ and 25 were multiparæ. Version was performed in 30 cases and forceps delivery in 10 cases. 32 children were alive. Of the other eight one died of hæmorrhage from a placenta prævia, one was a case of habitual death of the fœtus, two were the infants of mothers with grave toxæmia, two died from amniotic infection. The remaining two children died during delivery in cases of pelvic contraction. The maternal soft parts were uninjured in 21 cases; in ten cases the perineum was lacerated and in nine cases the cervix was torn. But sutures were only required in three cases. One patient died of puerperal septicæmia which was an incidental complication and not related to the spinal anæsthetic. Delmas regards these results as very promising and thinks that his method will take its place in obstetrical therapeutics.

My technique of low Cæsarean section by transverse incision of the low segment.

Jullien is a convert to the lower segment Cæsarean operation. He claims four advantages. First it is physiological; secondly it can be performed at any level in the lower segment; thirdly it does not necessitate much separation of the peritoneum and fourthly it never interferes with the placenta. The author uses a longidudinal subumbilical skin incision and eventrates the uterus. He then separates the peritoneum for a distance of two or three centimetres. Choosing a spot not covered by large veins he introduces a bistoury through the uterine wall and pushes it down to the membranes. He then makes a transverse incision with scissors, one point being placed in the opening made by the bistoury. The transverse incision must be made of adequate length. A common mistake is to make it too short. The fœtus is then expressed by squeezing the uterus. On the rare occasions when this does not suffice he introduces his hand into the uterus and delivers the child by the legs. After extraction of the placenta by expression from the uterus the uterine incision is closed in two layers. Jullien has performed this operation 21 times with one maternal death, from pulmonary embolism. Two cases were complicated by suppuration in the abdominal wall, one by a serious pulmonary complication due to ether anæsthesia, one by white leg and one by mammary infection. All the infants were delivered alive but two died shortly after birth, it is believed from congenital syphilis. The results, says the author are sufficiently encouraging for him to prefer his technique to any other. Contraindications to low segment Cæsarean section through a transverse uterine incision are rare.

Cancer of the cervical stump after subtotal hysterectomy.

Jeanneney finds is difficult accurately to estimate the frequency of cancer of the cervical stump after subtotal hysterectomy. The majority of surgeons judge from their impressions rather than from statistical evidence. Most authors agree that it is not more frequent than cancer of the cervix in general. Lecène estimates that not more than one patient, out of every two or three hundred upon whom subtotal hysterectomy has been performed subsequently develops cancer of the cervix. Faure says the frequency is one per cent. The author concludes that subtotal hysterectomy does not predispose to cancer of the cervix. In 90 per cent of

cases the preceding subtotal hysterectomy was performed for fibromyomata and the interval, which elapsed between the operation and the appearance of the growth in the stump, varied from less than one year to thirteen years in the cases collected by Jeanneney. He finds a short interval of one or two years the commonest and expresses the opinion that the chance of cancer diminishes in proportion to the time which has elapsed since the operation. After discussing the pros and cons of routine total hysterectomy as a prophylactic measure the author decides against this procedure. He recommends surgical removal of the affected cervix through an abdominal incision. He advises removal of the broad ligaments at the same time but does not say how much vagina he removes. For inoperable cases he advises curietherapy.

Purulent staphylococcal percarditis treated by vaccines during post-abortional septicæmia.

The case was one of septicæmia which followed abortion at the second month. A pericardial effusion became evident during the third week. 200 grammes of purulent fluid were removed by Potain's apparatus and the patient was given a voccine prepared from the fluid. The organism identified was the staphylococcus. The blood contained the same bacteria. Recovery was slow but sure and six months after discharge from hospital the patient was in excellent health.

Tubal pregnancy at term with living mother and living child.

The case presents several interesting features. The patient was a primigravida, aged 16 years, and the condition was diagnosed as placenta prævia because of the hæmorrhage of which the patient complained, the height of the presenting part and because the decidua, at the time of examination, was being extruded from the uterus and was, therefore, mistaken for the placenta. A live child weighing 2.705 kilogrammes was delivered *per abdomen*. The pregnancy had developed entirely at the expense of the Fallopian tube without adhesions to neighbouring organs, save for a small thin fringe of omentum. The uterus and the other Fallopian tube were conserved at the operation.

F. Roques.

Bulletin de la Société d'Obstetrique et de Gynécologié de Paris, etc.

No. 1, January 1929.

A tracheal aspirator. Le Lorier.

*On the prophylaxis of puerperal infection. Le Lorier.

Results of external version as prophylactic treatment in breach presentations at the Boucicault. Petrone.

On conceptional syphilis. Manouélian.

On the dilatation of the cervix after spinal anæsthesia: adjourned discussion.

Spinal anæsthesia and placenta prævia. de Vesian and René Solal.

Three cases of Cæsarean section with temporary eventration of the uterus. (Portes operation). Canales.

Late severe post-partum hæmorrhage: transfusion: bouillon-vaccine dressings: cure. de Vesian and René Solal.

*Primary epithelioma of the Fallopian tube. Le Balle and Patay.

SOCIETE D'OBSTETRIQUE ET DE GYNECOLOGIE DE BORDEAUX

A monster. J. Péry.

Five months pregnancy: premature rupture of membranes: extraction of fœtus by morcellation. Gautret.

Hysterectomy for puerperal infection: purulent infiltration of the uterus: death. Péry, Mangé and Boursier.

SOCIETE D'OBSTETRIQUE ET DE GYNECOLOGIE DE LYON.

*Concerning a case of late post-partum hæmorrhage previously reported to the Society. Voron and Moulinier.

Phlebitis of the four limbs during the course of a ruptured ectopic gestation. Cotte.

Four cases of obstetrical spinal anæsthesia after Welmas method. Eparvier.

General peritonitis at the eighth month: laparotomy: rapid delivery per vias naturales: cure. Michon and Pigeaud.

Myomectomy during pregnancy. Easy emptying of uterus (at term) under spinal anæsthesia. Villard, Banssillon and Chavent.

BULL. DE LA SOCIETE D'OBSTETRIQUE ET DE GYNECOLOGIE DE PARIS, ETC.

No. 2, February 1929.

Four cases of tumours of large size, partially or wholly subperitoneal in the pelvis and abdomen: technique of their extirpation. Petit-Dutaillis.

A case of spontaneous rupture of an ovarian dermoid. Lecène, Belot and C. Béclère. .....

*A case of salpingeal reaction after intra-uterine injection of lipoidol. Lecène, Tedesio and C. Béclère.

Some cases of partial symphysiotomy. Rudaux and Desnoyers.

Necrotic fibroid of the lower segment: Cæsarean hysterectomy. Sureau and Job.

The influence of dengue on pregnancy and labour. Hitzanidès.

Salpingitis during dengue. Hitzanidès.

REUNION OBST. AND GYN. DE NANCY.

Concerning pyelitis of pregnancy: a case of pyelo-hepato-renal syndrome recurring in two successive pregnancies. Fruhinsholz.

Transitory hemiplegia with total aphasia during the puerperium. Fruhinsholz and Cornil.

Follicular cyst of the ovary and its results: histo-physiological reactions of the uterine mucosa. Hamant and Mosinger.

*Spinal anæsthesia and uterine dilatation. Binet.

*Salpingitis and early pregnancy. Fruhinsholz, Hamant and Mosinger.

SOC. D'OBST. ET DE GYN. DE STRASBOURG.

Some uterine fibroids unsuitable for radiation treatment. Reeb.

*Reflections on the protection of the peritoneum. R. Keller.

*Uterine gangrene. R. Keller.

SOC. D'OBST. ET DE GYN. DE TOULOUSE.

Two cases of perforation of the posterior wall of the cervical canal during attempts at criminal abortion. Daléas.

*Umbilical erysipelas of the neonate cured by "propidex." Daléas.

A case of pubiotomy for impacted face presentation. Audebert.

A case of pubiotomy for contracted pelvis. Audebert and Estienny.

Partial placental retention with hæmorrhages and late infection: curettage: cure. Ménaché and Modiano.

*Hæmorrhage on the sixth day of the puerperium and serious infection with retained placenta: curettage: thrombo-phlebitis: death on fifty-fifth day. Estienny and Ribat.

*Disinfection of the uterus by intermittent irrigation with lactic bouillon: an irrigator-drain shown. Bertrou.

Gonococcal arthritis cured by auto-vaccine and diathermy. Audebert and Planques.

Post-abortum peritonitis in process of generalization: abdominal drainage and Mickulicz tampon: cure. Voron and Moulinier.

REUNION OBST. AND GYN. DE NANCY.

Two cases of acute intussesception in the nursling. Sabottier.

Sacral tumour and pregnancy. Hamant and Fruhinsholz.

Cranial deformity "exencephaly" due to anmiotic adhesion. Vermelin.

Concerning a case of puerperal tetanus. Le Lavergne, G. Lévy and Florentin.

SOC. D'OBST. ET DE GYN. DE STRASBOURG.

Concerning a case of multiple fibroids and three-months pregnancy in a retroverted uterus. Reeb.

*Carcinoma of the uterine body treated unsuccessfully by ultra-penetrating X-rays and radium: total abdominal extirpation: cure. Reeb.

*Ovarian teratoma, extirpation, rapid recurrence, death. R. Keller.

Sarcoma of the uterus perforating the intestine. R. Keller.

Bilateral papillomatous cysts of the ovaries with glandular metastases. R. Keller.

The influence of puncture of the membranes on the evolution of the labour at all stages of dilatation of the cervix. J. Kreis.

SOC. D'OBST. ET DE GYN. DE TOULOUSE.

Reflections on seven cases of placenta prævia of which three were central. P. Daléas.

Rupture of the cervix and lower segment. P. Daléas.

Tubal gestation with abnormal symptomatology. P. Daléas.

Severe hæmorrhages of the neonate and transfusion of maternal blood. Bertrou.

Acute hydramnios. Dieulafé.

*The action of spinal anæsthesia on the perinæum of the parturient. Audebert and Estienny.

Tuberculosis of the genital peritoneum and the puerperal state. F. Fournier.

*Hydatidiform mole and lutein cysts of the overy. G. Baillat and Balau.

Longitudinal septum of the vagina. L. and R. Dieulafé.

Physiological preamble for the investigation of phlebitis. Ducuing and Fourneux.

Some personal observations on the physiology of the pregnant uterus freed from its cerebro-spinal connections by spinal anæsthesia, or by section or removal of the cord. Ducuing.

Bilateral ectopic gestation, ampullary on one side, isthmic on the other: total removal of the appendages of the ampullary side; removal of the isthmic portion of the other tube followed by tubo-uterine implantation. F. Fournier.

*Repeated Cæsarean section for the third time, followed by subtotal hysterectomy: histological study of the scar. F. Fournier.

On the prophylaxis of puerperal infection.

The first measure is the prohibition of all vaginal examinations except in exceptional cases: by this means the mortality from infection was reduced at the Boucicault Maternity to 2.1 per 1,000 during 1924–1927. To improve this still further an injection of 20 c.cm. of "glycerine argyrolée" ten per cent is made into the vagina during labour. (The exact composition of the preparation is not stated). During 1928 there were no deaths from infection in 2,308 labours.

Primary epithelioma of the Fallopian tube.

To be published *in extenso* in the *Revue Gynécologique et Obstetrique*.

Concerning a case of late post-partum hæmorrhage previously reported to the Society. Society.

A ii-para, aged 27, was normally delivered and had hæmorrhage and fever on the eighth day; removal very gently of a piece of placenta; cessation of hæmorrhage; aggravation of signs of infection. Under energetic treatment the patient recovered and was so reported. A few days later pyræmia developed with metastases in lung and left knee and terminated fatally.

A case of salpingeal reaction after intra-uterine injection of lipoidol.

The first reaction in 230 cases. Injection was given a few days before the period was due and revealed hydrosalpinges, not palpable on examination; a febrile response with pain followed and masses were palpable on either side of the uterus. The inflammatory reaction subsided and the patient recovered without operation. The author discusses the question of re-infection or recrudescence of an old quiescent infection (after abortion six years earlier) in favour of the latter.

Spinal anæsthesia and uterine dilatation.

A case of portion of placenta retained for twelve months. Under spinal anæsthesia dilatation of the cervix was unusually easy.

Salpingitis and early pregnancy.

Three abortions at two months followed one full-time labour. Acute abdominal pain and bleeding came on after two months amenorrhœa, a right appendage swelling and a pregnant uterus were found. The patient was discharged apparently cured, but was readmitted with signs of threatened abortion a fortnight later.

Reflections on the protection of the peritoneum.

A plea for universal adoption of the dorsal decubitus for delivery in preference to the lateral. No "tips" are included.

Uterine gangrene.

Followed an abortion, early becoming septic; attempts at criminal abortion were denied but could not be excluded. The gangrenous area was at the fundus.

Umbilical erysipelas of the neonate cured by "propidex."

The infant died of cholera, although reputed to be cured of erysipelas.

Hæmorrhage on the sixth day of the puerperium and serious infection with retained placenta: curettage: thrombo-phlebitis: death on fifty fifth day.

This case is cited in support of Couvelaire's dictum that cases of severe infection of the uterus signalized by a severe hæmorrhage should be treated by hysterectomy and not local curettage etc. of the uterus.

In this case the remains of placenta retained were fragmentary and possibly only membranes and the early symptoms of infection not very severe. The discussion showed how easy it is to be wise after the event. No autopsy was allowed but the symptoms pointed to pyæmia following high uteropelvic venous infection.

Disinfection of the uterus by intermittent irrigation with lactic bouillon: an irrigator-drain shown.

The drain is made of two rubber catheters, size 20–24, solutioned by rubber solution for a short distance below the ends, in this way the cervix is kept patent by capillary drainage; the bouillon is injected every two to three hours in 20–30 c.c. doses and light gauze vaginal packing ensures the drain being kept in place and the bouillon kept in contact with the vaginal and perinæal wounds.

Carcinoma of the uterine body treated unsuccessfully by ultra-penetrating X-rays and radium: total abdominal extirpation: cure.

The word "cure" refers only to the immediate surgical result in a recent case.

Ovarian teratoma, extirpation, rapid recurrence, death.

Bilateral dermoids with sarcoma of one tumour. Only scanty histological details are given.

The action of spinal anæsthesia on the perineum of the parturient.

It is generally conceded that spinal anæsthesia exercises a softening influence on the perinæum but it is not correct to say that "the perinæum is abolished." Sometimes severe ruptures occur, at times they can only be avoided by episiotomy. The effect depends largely on the anatomical state of the perinæum: this they classify under three heads: (1) the muscular, firm perinæum of the young primigravida, in this spinal anæsthesia acts like a charm; (2) the fibrous perinæum of the elderly primigravida which is badly torn; and (3) the infantile type of perinæum found particularly in underdeveloped and especially rachitic patients, in this type spinal anæsthesia is without effect.

Hydatidiform mole and lutein cysts of the ovary.

Two cases: one was left alone and the cysts disappeared; the other developed pain and some pressure symptoms due to the size of the tumours; one was removed and the other partially resected with good results. No development of chorionepithelioma in either case.

Repeated Cæsarean section for the third time, followed by subtotal hysterectomy: histological study of the scar.

Macroscopically and microscopically there was an excellent result of the previous hysterectomies. The uterus was removed owing to the numerous adhesions to the omentum and to the abdominal wall.

R. A. Hendry.

Bruxelles Médical.

August 18, 1929.

*The modern treatment of puerperal infections. Van Cauwenbergh.

*The indications for and method of operation in a case of ruptured tubal pregnancy. M. Brouha.

September 8, 1929.

*Treatment of the vomiting of pregnancy by desensitisation. A. Weymeersch and R. de Guchteneere.

The modern treatment of puerperal infections.

Van Cauwenbergh points out that so many methods of treatment for puerperal infections have been recommended and that in spite of prophylaxis isolated cases and small epidemics occur in sufficient numbers to cause uneasiness. The responsible organism is usually a streptococcus. Geddes states that infections with staphylococci and Bacillus coli are very rare and always secondary to a streptococcal infection. Lafont, Houel and Jahier have reported a fatal case due to an infection with Bacillus coli and the author and Schwartz, Chirie and Gailliard have each seen a similar case.

He divides his treatment into (1) prophylactic and (2) curative. He points out that if all cases were to be delivered in a clinic then the desirable prophylactic measures would be easily carried out, but that this ideal is far from being carried out. He divides his cases into three groups: (1) special cases which need aseptic conditions, assistance and nursing care as well as those whose homes are impossible for a delivery; (2) cases of difficult and dangerous labour which must be treated in an institution; (3) those who are suitable to be treated at home. For these he would like to organize a public health service depot from which doctors and midwives might obtain the necessary outfit for any case.

The author shortly enumerates the methods of introduction of infection and pleads for the use of gloves adequately sterilized by boiling or dry sterilization and not just dipped into an antiseptic solution. Certain obstetricians now substitute rectal for vaginal examination whenever possible, but even then some deliveries still call for vaginal interference. Coitus during the later period of pregnancy has been blamed for the

introduction of infection with good cause. But the author considers that Brouha's stipulation of abstinence during the last two months is unlikely to be accepted and adhered to by the public.

He advocates preparation of the vulva as for a surgical operation but deprecates vaginal douching. In the event of a purulent vaginal discharge he prefers swabbing with silver nitrate two per cent solution or argyrol glycerine. Irrigation with half per cent lactic acid solution for ten days before term he has not found to be effective and antistreptococcal serum as a prophylactic he considers useless. He has used a mixed vaccine as a repeated injection and also as a local application in the form of bouillon culture to the uterine cavity immediately after delivery. He considers this local application suitable for suspected cases but not for routine prophylaxis. He finds that subcutaneous injections of sulpharsenol after a difficult labour appear to reduce the morbidity rate.

Recent work in England suggests that a lowered resistance to infection results from a deficiency of vitamin A and that this might be used as a prophylactic.

For the purpose of treatment of an infected case he classifies all cases under (1) local and (2) general spread being by way of the lymphatics or the blood stream. For cases of local infection of the vulva or vagina he recommends thorough local treatment by cauterization or the application of vaccine bouillon. If the endometrium is infected he recommends exploration without curettage, and, in addition, intra-uterine douching or irrigation by Carrel's method. Isolation of the organism and preparation of an autogenous vaccine for use if there is time is always desirable; while this is being prepared a stock vaccine combined with the use of an abdominal ice bag and ergot by mouth is recommended.

If the infection becomes general there are two alternatives of treatment: (1) surgical, (2) medical. Surgical intervention is the obvious treatment in certain well-defined cases. Where medical treatment is decided upon polyvalent antistreptococcic serum in large doses of 100 c.c. appears to be more effective in the treatment of a declared case than as a prophylactic measure.

Warnekros' antitoxin against hæmolytic streptococcic infection has had good results with some authorities, though the author has had no personal experience. Stock vaccines based on the non-specific theory of immunity are also used. He strongly approves of the use of autogenous vaccines and also of blood transfusions from a person already artificially immunized or recovering from a similar infection. He has also tried intravenous injections of novarsenobenzol, of sulpharsenol and of rivavol.

Septicemine and electrargol intramuscularly he has found less beneficial, the first because it seems only to be effective in benign cases, and the second because the benefit is not commensurate with the shock produced. Fixation abscess formation, one of the oldest methods of treatment, has fallen into disuse.

He fully describes the use of auto-hæmeolysotherapy first carried out by Descarpentries of Roubaix and reported by him in 1922, 1925, 1926 and 1928 without inducing much interest in the method in his readers. By this method the fall in temperature is most marked in cases of streptococcic infection and less so with other infections. Localisation of the infection is helped, Bacillus coli being the most refractory with this treatment. The

localized abscess can be opened at an early date and recovery is rapid thereafter. A second injection can be given if there is recurrence of the pyrexia.

The indications for and method of operation in a case of ruptured tubal pregnancy.

Brouha describes a case of ruptured tubal pregnancy which was treated by blood transfusion and laparotomy on the day following the rupture when the patient had recovered from her shock. He considers that the condition of the patient is not in proportion to the amount of blood lost but is influenced by the presence of blood clot in contact with the peritoneum giving rise to reflex symptoms.

He pleads for the more frequent employment of intravenous transfusion of blood as a preliminary to less hasty operation. In the case of ruptured interstitial pregnancy he excises the cornu when possible instead of performing hysterectomy.

Treatment of the vomiting of pregnancy by desensitisation.

Weymeersch and de Guchteneere consider that the vomiting of pregnancy is due to a pathogenic condition, and they agree with the treatment put forward by Levy-Solal and his collaborators. On the grounds of the resemblance between the vomiting of pregnancy and that of anaphylaxis they have suggested treatment by desensitization. Patients are desensitized to placental extract by cutaneous reaction. Levy-Solal considers that vomiting of pregnancy is a manifestation of insufficiency of proteopexy of the liver and favoured by vago-sympathetic irregularity and glandular disfunction. The other manifestations of the toxæmia such as acidosis, aerophagia, tachycardia, nervous and psychic troubles being only secondary manifestations. Pasteur Vallery-Radot has obtained the best results by daily intradermic doses of 50 per cent Witte's peptone. Levy-Solal has had eight good results in severe cases.

The authors tried this method in twelve cases which they describe in detail; they found that where there was a marked reaction the improvement was more pronounced. Eleven of their twelve cases were cured.

R. H. B. Adamson.

Archiv für Gynäkologie.

March 20, 1929.

Researches concerning the biology and pharmacology of the placenta. I. The technique of perfusion of the surviving placenta. H. Küstner and H. Siedentopf.

The Reid Hunt reaction and pregnancy. H. Euffinger, H. Wiesbader and L. Foesaneann.

*The ætiology of pregnancy toxicoses. (Are isoagglutinins, isohæmolysins or anaphylaxins of ætiological significance?). F. Isbruch and T. Wohlfeil.

The hydrogen-ion concentration of the cerebro-spinal fluid in eclampsia and its connection with eclamptic convulsions. G. Schpoljansky and A. Danzig.

Glycogen destruction in the vagina. H. Schultheiss.

The biology of the vagina. I. The behaviour of the vaginal flora and chemical conditions in the absence of pregnancy, and their connection with ovarian function. H. Schultheiss.

The biology of the vagina. II. Flora and chemistry of the vaginal secretion during pregnancy. H. Schultheiss.

*Stereoscopic radiography of twin-placentæ. F. Kiffner.

*Cephalhæmatoma. H. Naujoks.

The mineral composition of cysts (Ca, K, Na, P and Cl). A. Schepetinsky and M. Kafitin.

*The histological regression of uterine carcinoma after X-radiation. R. Dryoff.

Vaginal metastases of hypernephroma. O. Gragert.

Gangrene of the forearm in a newborn infant. W. Fischer.

The histogenesis of uterine myoma. Ulesko-Stroganowa.

Oxidation defects in carbon metabolism during pregnancy. A. Bock.

April 30, 1929.

*Proceedings of the German Gynæcological Society.

June 8, 1929.

The influence of the male sexual hormone on the female organs of generation and the processes of pregnancy. (Hormonic sterilisation and interruption of pregnancy in the female animal). W. Reiprich.

*The secretory behaviour of the posterior lobe of the pituitary under the influence of gonad activity in the female organism. Siegert.

Disturbances in the colloid constituency of the blood plasma during gestation and their compensation by means of sodium thiosulphate. G. Trapl.

Ovarian function and lipoid storage. II. The connections between lecithin storage and ovarian function. C. Kaufmann and O. Mühlbock.

Histo-topochemical researches concerning the placenta. O. Schultz-Brauns and L. Schoenholz.

*Operative treatment of prolapse. H. Porges and E. Zimmer.

Histological studies concerning sympathicotropic cells. H. O. Neumann.

Spontaneous pneumothorax in pregnancy. A. Szenes.

Rare blastomata of the female genitalia. J. Richter.

Clinical and pathological features of ovarian hypernephroma. A. W. Hochloff.

*Radiological measurement of the pelvis from the front of the seated patient. Also attempted measurement of the fœtal head. W. Bickenbach.

The ætiology of pregnancy toxicoses. (Are isoagglutinins, isohæmolysins or anaphylaxins of ætiological significance?)

Comparison of maternal and fœtal blood-groupings in 410 cases showed that no increased incidence of pregnancy toxicosis was present in the group in which maternal and fœtal blood were heterospecific. Isohæmolysis (gauged by examination of the action of maternal serum on fœtal erythrocytes and vice-versa) was in no way connected with the incidence of toxicosis. Experiments in fifteen guinea-pigs with the serum of toxicosis and normal cases gave rise to no instance of anaphylactic shock, so that it is not legitimate to regard pregnancy toxicosis as an anaphylactic

manifestation. In the isohæmolysis experiments it was found that in cases of Wassermann-positive syphilis maternal serum hæmolysed fœtal red blood corpuscles and vice-versa, independently of the respective blood groupings : this did not occur in two cases of latent syphilis.

Stereoscopic radiography of twin-placentæ.

Technically, for demonstration of placental blood vessels and in particular for detection of anastomosis in placentæ of multiple pregnancy, stereoscopic radiograms are required and photographs may have to be taken from both sides of the placenta. Anastomosis are present in monochorionic twin-placentæ, but in the author's experience are absent in dichorionic.

Cephalhæmatoma.

Suction was applied electrically for half an hour through a bell five cm. in diameter applied to the scalp of a newly deceased fœtus. A subcutaneous (epiperiosteal)hæmatoma was produced but the periosteum and the skull were not separated, so that there was no cephalhæmatoma. A cephalhæmatoma with periosteal elevation over an effusion of blood could be induced if the suction were preceded by pressure on the skull combined with tangential friction. The writer's clinical material comprises 29 cases of left-sided to 26 of right-sided cephalhæmatoma; several cases in which the tumour was noted while the os was incompletely dilated and/or the membranes were intact; and cases in which intracranial bleeding also was present.

The histological regression of uterine carcinoma after X-radiation.

A report of microscopical examination of tissues excised after X-ray treatment of cancer of the cervix : the patients concerned were cured eventually and not more than two excisions were made in one patient. The most important change within fourteen days after X-radiation and one which is aparent immediately, is clumping and destruction of nuclear chromatin : some fresh mitoses continue nevertheless to occur. The other primary reaction consists in hyperæmia, usually followed by œdema. Carcinoma cells are influenced before and more than mesenchymal cells, in which retrogressive alterations are not visible until the third or fourth week. The histological variations are described and illustrated in detail. Two months after X-radiation proliferation in the intima and media of the small arteries is well marked and may lead to obliteration. In the replacement of malignant by scar tissue Dryoff attaches considerably more importance to the activity of histiocytes derived from perivascular adventitia than to local connective tissue cells.

Proceedings of the German Gynæcological Society.

This number of the *Archiv* contains in 636 pages a summary of the chief papers read at the May meeting of the German Gynæcological Society, which was devoted to consideration of the physiological and pathological biology of the placenta. A Mayer dealt with (1) anatomy and physiology; (2) placental respiration; (3 and 4) the placenta as an organ of nutrition and excretion; (5) toxicity of the placenta; (6) placental function; and fœtal development; (7) the placenta as an intermediary of metabolism;

(8) intra-uterine sex determination; (9) sero-chemical diagnosis of pregnancy; (10) the placenta as an organ of internal secretion; (11) the mechanism of production of labour; (12) lactation of the placenta. E. Vogt dealt with vitamine in the placenta and its connexion with the placental hormone. The remaining half of the report consists of a pathological part for which L. Seitz is responsible.

The secretory behaviour of the posterior lobe of the pituitary under the influence of gonad activity in the female organism.

The average weight of the pituitary gland in virginal guinea-pigs is 25 to 30 per cent greater in animals which have been castrated operatively or by X-radiation. The response to posterior pituitary extract of the isolated guinea-pig or rat uterus is less in castrated than in normal animals. The experimental evidence is reviewed from which the conclusion is drawn that the secretion of the posterior lobe of the pituitary, so far as it is connected with the genitalia, is regulated by ovarian hormone acting on vegetative centres in the base of the brain.

Operative treatment of prolapse.

An article in praise of Halban's methods of fascioplasty for cystocele and rectocele and of vesico-fixation for prolapse, as described in his monograph published in 1919. Satisfactory results were found from after-examination of 600 cases, of which 400 had some degree of uterine prolapse. The treatment is said to be applicable to all cases of prolapse, independently of the patient's age, the presence or absence of a uterus, and the degree of the prolapse.

Radiological measurement of the pelvis from the front of the seated patient. Also attempted measurement of the fœtal head.

A summary is given of the endeavours which have been made to secure radiological measurement of the maternal pelvis and fœtal head: the various stereoscopic methods and the lateral method of Guthmann are included. The restriction of the latter to the saggital plane and the massive amounts of X-rays required render desirable further developments of the frontal method with the patient seated—a method whose drawbacks can be tracted chiefly to the angular deviation between the horizontal plane and that of the conjugata vera. The error is reckoned mathematically and expressed in a correction curve: nevertheless errors of more than 0.5 cm. are thus unavoidable. They can in a large degree be evaded if centering on the symphysis instead of the pelvic axis is secured (focal distance 60 to 70 cm.), combined with careful adjustment into parallelism with the film of the line joining the upper border of the symphysis and the spinous process of the last lumbar vertebra. Tests on skeletal pelves showed such a method to be associated with no greater error than 0.25 cm in measurement of the true conjugate. Dimensions of the oblique and transverse diameters are only approximately given (0.5 to 1 cm. error). The reliability of the measurement of the conjugata vera was also confirmed by examination of 70 pregnant subjects near term in whom the conjugate had also been estimated by introduction of the Gauss-Bilicky instrument. A technique of radiological determination of the transverse diameter of the fœtal skull is described. Radiological investigations (1)

may exclude a cephalo-pelvic disproportion which has been inferred from clinical measurements (2) may exhibit a disproportion which (1.5 cm. or over) cannot be overcome during labour by moulding or (3) may be useless with regard to prognosis in labours wherein the disproportion is from a few millimetres to 1.5 cm.—here the compressibility of the head and the strength of the uterine contractions are the decisive factors.

W. E. Crowther.

Monatsschrift für Geburtshülfe und Gynäkologie.

Vol. lxxxi, No. 6, April 1929.

*On the value of biochemical reactions and changes in the constitution of the blood in the diagnosis of a disturbed extra-uterine pregnancy. G. Feyertag.

*The relation between psoriasis and ovarian function. E. Vogt.

*Scopolamine-morphia-ether narcosis in gynæcology. N. N. Ssergejew.

*On the results of Alexander Adams' operation. P. Garfunkel.

A myoma as cause of fœtal malformation. H. Hofstätter.

Contribution on the malformations of the diaphragm and thoracic wall. F. Kammerhuber.

Criticism of Prof. Holtzmann's article on the influence of the textile industry on pregnancy, labour and the newborn. M. Hirsch.

Reply to above criticism. F. Holtzmann.

On the effect of the female sex hormone menformon, especially on the mamma. K. Ebhardt.

Vol. lxxxii, Nos. 1–2, May 1929.

*The hypophysis and female genitalia. The hypophysis and pregnancy. G. A. Wagner.

*The action of vitamins on the function of the ovary in animals. K. Adler and E. Böltink.

*The increased growth of the nails in pregnancy. J. Halban and M. Z. Spitzer.

*Traumatic lameness after childbirth. H. Rummel.

*Trauma during labour and its significance in midwifery. G. Vögel.

*Uterine hæmorrhage at the menopause. W. Lahm.

*"Unden" in the care of premature babies. E. Martin.

Rendering myoma operations easier from above and below. H. Sellheim.

Abdominal and vaginal operations in midwifery and gynæcology. L. Fraenkel.

*Bactericidal powers of the blood of the newborn. M. Gutman.

Vol. lxxxii, No. 3, June 1929.

Pathology of the basal layer of the uterine mucous membrane. W. Lahm.

*Secondary uterine sarcoma after a long latent period. B. Steinhardt.

*Popoff's method of forming an artificial vagina and its ultimate results. W. J. Sdrawomyslow.

Intra-uterine lavage as a method of gynæcological treatment. N. A. Mussatow.

Prolapse of the cord. E. Brandis.

Vol. lxxxii, Nos. 4–5, July 1929.

Torsion of the uterus in late pregnancy. J. Koerner.
Spontaneous rupture of a cord with velamentous insertion. J. Russin.
*Osteogenesis imperfecta. E. Puppel.
Embryonic development and preparedness for tumour formation. L. Freund.
Rupture of the capsule of an intramural myoma. R. Brühl.
Cancer and the results of treatment in gynæcological cases. H. Nahmmacher.
*The ultimate results of operative treatment of inflammation of the adnexa. F. C. Geller.
The diagnostic significance of the Bordet-Gengou reaction in gonorrhœa in women. N. A. Levow.
Operative castration after ineffectual X-ray castration. H. Wolf.
X-ray castration. H. Wolf.
*Kaufmann's diuretic test and its significance for gynæcological surgery. S. Heckscher.
*Late rupture of old abdominal scars. K. Kaiser.
*Recovery from mercurial poisoning. K. Kaiser.

On the value of biochemical reactions and changes in the constitution of the blood in the diagnosis of a disturbed extra-uterine pregnancy.

Points in Feyertag's article are :— 1. Changes in sedimentation rate and leucocyte count depended on the amount of hæmorrhage, and were not of much diagnostic value. 2. A pyramidon test was negative in ectopic gestation. 3. Quantitative bilirubin estimation was useful. 4. Experimental glycosuria occurred only when the ovum remained in connexion with the Fallopian tube.

The relation between psoriasis and ovarian function.

A study of four cases in various stages of sexual life has led Vogt to recommend care in producing an artificial menopause in patients with a tendency to psoriasis. He advises the use of ovarian preparations, and also points out that avitaminosis appears to play a part in the etiology of the condition.

Scopolamine morphia-ether narcosis in gynæcology.

Ssergejew recommends the use of morphia and scopolamine before a ether anæsthesia on the grounds that (*a*) less ether is used; (*b*) psychological effects are lessened; (*c*) scopolamine lessens lung complications, both by reducing secretion and lowering reflex action from the peritoneum; (*d*) adrenalin can be used prophylactically where the blood pressure is low. Lobelin is indicated in any respiratory difficulty. On the other hand scopolamine is not stable and must be freshly dissolved and tested before use.

On the results of Alexander Adams' operation.

Garfunkel concludes that the Alexander Adams operation is a safe and satisfactory one for mobile displacements. Adherent retroversions should receive massage, and if this fails, have a laparotomy performed.

The hypophysis and female genitalia. The hypophysis and pregnancy.

Wagner gives a full account of the present state of knowledge of the pituitary gland. Practical conclusions are the use of anterior lobe products for certain types of amenorrhœa, and the effect of X-rays or diathermy applied to the gland itself, and the value of posterior lobe extracts. The author is studying Parke Davis' preparations—pitocin and pitressin. He believes pituitrin may occasonally be of diagnostic value in cases of uterine hæmorrhage due to tubal pregnancy and cysts.

The action of vitamins on the funcaion of the ovary in animals

Adler and Böltink found that vitamins D and E produce more frequent œstrus in white mice. The intervals become shorter until the condition is almost permanent. Vitamin E is quicker in its effect than D. Both resemble ovarian hormone in this, but are weaker in action.

The increased growth of the nails in pregnancy.

The general growth impulse of pregnancy includes the nails in its effect. The rate of growth decreases after labour and may be subnormal awhile.

Traumatic lameness after childbirth.

Injury to the sciatic nerve may occur even with spontaneous delivery through a contracted pelvis. The prognosis is doubtful, and severe pain radiating down the leg during labour should not be ignored. Cæsarean section may be advisable where the injury has once occurred with a previous labour.

Trauma during labour and its significance in midwifery.

Vögel pleads for less operative interference in midwifery, with the exception of Cæsarean section, inasmuch as the extra strain may often be the final cause of death in a child enfeebled by prematurity or long labour.

Uterine hæmorrhage at the menopause.

Lahm emphasizes that not all menopausal hæmorrhages are due to carcinoma. He gives endometritis and polypi as possible causes, and points out that local trauma, constipation and cardiac insufficiency may take the place of ovarian secretion in causing congestion of the uterus; re-awakened ovarian activity may also be due to tumour formation.

"Unden" in the care of premature babies.

Martin found unden, an ovarian hormone, in excess in the blood of pregnant women and in the urine of full-time babies during the first four days of life. He found its administration per os of great value in the rearing of six premature babies.

Rendering myoma operations easier from above and below.

Sellheim recommends shortening the cervix after splitting it, when operating vaginally for myoma and in an abdominal operation, enucleating and reducing the size of the tumours before finally excising them. He considers this to render ligature more easy and injury to such structures as the ureter less likely.

Bactericidal powers of the blood of the new-born.

Gutman compares the bactericidal powers of umbilical blood with those of the mother by Wright's implanting method, and finds a normal ratio of 1.2–2. In asphyxia or other damage the ratio rises to 30 and more. No other cause, such as weight, sex, length of labour, affected the figure.

Secondary uterine sarcoma after a long latent period.

The patient had enlarged cervical glands removed at two different times with the diagnosis of lymphosarcoma. Fourteen years later inguinal glands were affected, but controlled with X-rays. A severe uterine hæmorrhage then necessitated hysterectomy, when the uterus showed a very extensive sarcoma. The question of the original site of the disease was discussed, the glands being considered the most probable.

Popoff's method of forming an artificial vagina and its ultimate results.

Results of five cases reported were excellent in three, which were operated on 12–16 years ago. One patient died after the operation, and the fifth case was too recent for its value to be estimated.

Osteogenesis imperfecta.

The mother had had numerous fractures and the child showed even more in the first twelve days of its life. Notwithstanding this, it did well generally, and was transferred to the care of an orthopædic surgeon. The fractures healed quickly. The medico-legal aspect of the case is mentioned, as the mother alleged negligence causing a fracture.

The ultimate results of operative treatment of inflammation of the adnexa.

The primary mortality of cases treated by radical operation is small, but still double that of the conservative operation. The results both as regards freedom from symptoms and recurrences are much better with the radical operation, but on the other hand 20 per cent of the conservatively treated cases became pregnant. Each case has to be individually considered; where both Fallopian tubes are sealed, radical operation is recommended. This is specially a case where the patient has to be consulted.

The diagnostic significance of the Bordet-Gengou reaction in gonorrhœa in women.

The Bordet-Gengou reaction is of great diagnostic value especially in complicated cases of gonorrhœa. In uncomplicated cases the reaction is positive in 50 per cent of acute cases, and 27.8 per cent of chronic ones; gonococci in secretions raises the percentages of positive cases. Ninety per cent in complicated cases with gonococci in films showed a positive reaction and 75 per cent where no cocci were found in films.

Kaufmann's diuretic test and its significance for gynæcological surgery.

Kaufmann's test has given simple satisfactory results as a criterion of circulatory efficiency. Pregnancy and menstruation gave poor results, possibly due to changes of internal secretion, while myomata showed most change in gynæcological cases.

Late rupture of old abdominal scar.

The patient had had sepsis in a Cæsarean wound four days after section and complete splitting of the wound ten days later; this had healed with a hernial scar. Two years later, for no apparent cause, while the patient was asleep at night, the scar gave way and intestines escaped into the bed. The wound healed again by first intention, and a further operation was done later. Silk sutures held under superficial sepsis.

Recovery from mercurial poisoning.

In the interesting case reported, a girl three months pregnant showed acute toxic symptoms of diarrhœa and anuria. Hysterotomy was followed by decapsulation of the kidney before recovery occurred, and the patient then owned to having taken half a glass of oxycyanate of mercury suicidally.

Dorothy N. L. Leverkus.

Münchener Medizinische Wochenschrift

No. 31, August 2, 1929.

*Coitus infection a cause of puerperal fever. A. Baer.
*Pregnancy and sexual intercourse. L. Ballin.

No. 33, August 9, 1929.

Treatment of damaged cranium in infants. H. Stendel.
*An efficient method in the conservative treatment of tumours of the adnexa. B. Aschner.
*Anæsthesia in labour with special reference to narcyl. O. Mallebrau.

No. 35, August 30, 1929.

An effective milk suction pump. F. Thoenes.

No. 36, September 6, 1929.

Simplification of myomata operations. H. Sellheim.

No. 38, September 20, 1929.

*The position of Cæsarean section in modern obstetrics. R. Hornung.
*The problem of carcinoma of the female genital organs. P. Gormick.
Notes on Cæsarean section. H. Martins and L. Ramsaur.

No. 39, September 27, 1929.

*Treatment of sterility by tubal inflation. A. Myer.

Coitus infection a cause of puerperal fever.

Baer had two cases of puerperal fever caused by coitus which took place after labour had begun an hour or two before delivery. In both cases the infective organism was found in the vagina of the mother and in the preputial sac of the husband. In the first case it was a streptococcus hæmolyticus and in spite of energetic therapeutic measures the woman died on the seventh day and the post mortem gave a typical picture of septic peritonitis with an enlarged, soft spleen.

In the second case a Gram-positive diplococcus was found in both parents. The mother survived. In both cases the woman had had careful instruction in sex hygiene at the antenatal clinic but they had given in,

in spite of their own suffering. Baer demands that husbands should receive definite instruction, to prevent their thus endangering their wives' lives.

Pregnancy and sexual intercourse.

Ballin deplores the discrepancies of opinion expressed on this subject not only in medical literature but also in popular hygienic works.

Such contradiction is the reverse of enlightening and gives rise to great confusion in the lay mind. He urges that some clear and definite understanding and teaching on this thorny subject be arrived at, for hearing such conflicting opinion expressed on an important subject such as this undermines the confidence of the public in their medical advisers.

From a large experience over a long period at an important gynæcological and obstetric hospital he concludes that in the majority of cases, sexual intercourse during pregnancy is the rule and that in the case of healthy women, harmful results in the form of abortion during the first half of pregnancy are rare and that it is difficult to prove that such intercourse was the cause of the numerous abortions that do occur during that period. Therefore he considers it is necessary to forbid such intercourse during the first five months to normally healthy women.

On the other hand, in the presence of any abnormality or deficiency in the female genital organs such as retroflexion, infantilism, etc., intercourse should be very strictly limited and if there is any tendency to abortion, altogether prohibited. In the latter months of pregnancy intercourse is risky because of the dangers of hæmorrhage, premature rupture of the membranes, puerperal fever and sepsis. Therefore great moderation should be practised from the sixth to eighth month and abstinence after that date. He agrees that intercourse in normal cases may be resumed five or six weeks after labour.

An efficient method in the conservative treatment of tumours of the adnexa.

The author draws attention to a recent article by Heidler in the *Wiener Klinische Wochenschrift*, No. 7, 1929, in which Heidler makes three important observations :

1. That in tumours of the adnexa the radical operation is attended by a high mortality, and does not always remove pain and disability.

2. That the ultimate prognosis is difficult to determine. He had a bad experience here in the case of a woman of 30 on whom a radical operation was performed. The operation appeared at first to be entirely successful, all symptoms disappearing. When, however, he saw the patient again in a few months she was unrecognisable. She had become a stout old lady and was in despair over the result of the operation. The most energetic organotherapy and other treatment brought no results.

3. That no real progress has been made during the last ten years in the treatment of these tumours, the only progress being made is that the operation is undertaken with more reserve, treatment by diathermy, intestinal antisepsis, organotherapy and protein body therapy, being substituted as much as possible.

Aschner states that his own method, as described in his book on conservative therapy, has given the best results in the treatment of tumours of the adnexa, pyosalpinx, parametritis, perimetritis, etc. The three

factors of the system are: (1) Leaches applied for one and a half hours, the wounds being allowed to bleed freely into sterile gauze for six to twelve hours. (2) Calomel two or three times a week in very small doses of .01 to to .02 grammes. Here the antiphlogistic effect on the lymphatic system and liver is the chief effect and not so much purgation. (3) The use of ichthyol suppositories made up in .2 gramme doses with antipyrin .5 gramme and cocoa butter, one suppository daily. These are more soothing and more effectual than the usual tampons which absorb most of the drug.

In cases of pyosalpinx and rise of temperature with a tendency to abscess formation, he gives a daily vaginal globule of gum gallini, gum myrrhæ and gum olibani equal parts in cocoa butter. Fluctuation then takes place and the abscess can easily be incised if it does not discharge externally. He gives an interesting series of cases in which this method was used with success in women suffering from acute and chronic tumours and inflammatory conditions of the adnexa. Operation was rendered unnecessary in all.

Anæsthesia in labour with special reference to narcyl.

Mallebran revises the various anæsthetics, rectal and general, used in labour, and concludes that narcyl gas (ethyl narceine chloride) is one of the safest and most satisfactory. Given in the special apparatus made by Drager & Co. of Lubeck, in combination with oxygen, 30 per cent narcyl and 70 per cent oxygen, is the usual strength, and that in concentration there is no weakening of the labour pains, which are perceptible and are made use of by the patient without any sensation of pain. It is easily managed and demands little or no co-operation on the part of the patient. It is rapid in action and excreted rapidly. There is no atony and the contractility of the uterus is well maintained and the percentage of hæmorrhage distinctly lessened. Its use does not depend on the presence of anoxæmia. If operative interference should be necessary a higher concentration of 70 per cent to 80 per cent sends the patient into oblivion in a few moments, and all ordinary obstetrical and gynæcological operations, including Cæsarean section, can be done without the aid of any other anæsthetic. There was not a single case of harm or damage to the mother, no cyanosis or asphyxia or disturbance of the cardiac function, and the cases of post-narcotic broncho-pneumonia were never higher than .03 per cent. As to the effect on the child, the majority of infants are full of life and vigour; oligopnœa is rare and stopped in a moment by tickling the skin. In a thousand cases there was no really harmful effect on the child. The only contra-indication is eclampsia. In half the cases narcyl stopped the attacks, but in 50 per cent it failed to do so, and as it tends to raise the blood pressure it was abandoned in these cases.

The position of Cæsarean section in modern obstetrics.

Hornung revises the results of Cæsarean section and draws the following conclusions, deploring the prevailing tendency to regard the operation as a perfectly safe one, for it still has a very high mortality, quite as high as that of any large abdominal operation, with the exception of operations for removal of malignant tumours. In comparison with vaginal delivery, the disadvantages and dangers of this operation for the mother

can hardly be said to be compensated for by the great effect of Cæsarean section in preserving the life of a single infant. He considers that its chief indications in obstetrics are firstly in dealing with those acute and sudden grave dangers to the mother's life, such as placenta prævia, eclampsia, and threatening rupture of the uterus. Secondly, in cases of narrow and deformed pelvis, where it prevents the undoubted perils of labour.

The problem of carcinoma of the female genital organs.

Who is responsible for the large percentage of inoperable cases of carcinoma of the female genital organs? Gormick asks this question and points out that the percentage of inoperable cases of carcinoma of the uterus, namely 45 per cent, is as high to-day as it was ten years ago, when he and Phillips reported on 1051 cases received at the Frankfort Frauenklinik from 1913 to 1919. There is no doubt that the hopelessly ignorant and careless attitude of the mothers regarding their own health has much to do with it. Their ignorance of all personal hygiene, and the light-headed way in which they accept vaginal discharges, irregular hæmorrhages, etc. as normal to their time of life, in spite of much teaching of the clinics and the advice of doctors and midwives. The chief blame, however, in this sad state of affairs must fall upon the doctors, and he gives some very incriminating testimony on this point, with tables showing how often the prescription of styptics for months together, without vaginal examination, has led to fatal results.

Treatment of sterility by tubal inflation.

Myer regards this treatment done with all due precautions as a method that is comparatively free from danger, and useful both for diagnostic and therapeutic purposes. Diagnostically it enables the gynæcologist to decide whether or no the indication for salpingostomy is present. Therapeutically the results cannot be said to be brilliant, for it gives at the most a 21 to 30 per cent chance of conception. This is no doubt partly due to the fact that in the cases where it is used, conception has been rendered more difficult by age, previous contra-conceptive measures, etc. Even then it represents one of the most effectual methods in vogue. He gives figures showing that even after the Fallopian tubes have been made patent, pregnancy occurs only in 21 per cent of cases, and in many only after two or three years, which points to the fact that patency of the Fallopian tubes is not the only factor to be considered in sterility. In 18 women of the series with endocrine deficiency, adiposity, hypomenorrhœa, etc., only two (10½ per cent) were capable of conception.

Justina Wilson.

Annali di Ostetricia e Ginecologia.

May 1929.

Resection of the pre-sacral sympathetic nerve in operative gynæcology. A. de Grisogono.

Amato's hæmoclasic test in gonococcal lesions complicating pregnancy and puerperium. C. Armanini and G. Bertolotti.

*The fertility vitamine. Avitaminosis and pregnancy. L. Rio.

Physiological post-partum rigors. A. Vignali.
Foreign bodies in the abdominal cavity to induce abortion. V. Giovetti.
Puerperal infection with Loeffler's bacillus. S. Martines.

June 1929.

*The presence of fat and lipoids in the decidual cells during normal pregnancy. S. Martines.
*A case of bilateral purulent gonococcal otitis media. G. Grossi.
Ovarian abscesses. C. Raffaele.
Recurring extra-uterine pregnancy. M. Arciesi.

July 1929.

Ammonæmia in the normal and pathological puerperium and in the fœtus. G. Motta.
Diabetes insipidus and pregnancy. E. Monigliano.
The influence of pregnancy and the puerperium on the development of experimental adenocarcinoma. E. Barbanti.

August 1929.

*Administration of thyroid extract in the treatment of eclampsia and severe albuminuria (a counter-test to Mück's sign). G. Grossi.
Menstrual disturbances in genital tuberculosis. F. d'Aprile.
A clinico-experimental research on Müller's hæmophagia. G. Segre.

The fertility vitamine. Avitaminosis and pregnancy.

It has been shown that while non-pregnant animals deprived of vitamin E in their diet appear to be in good health, they become sterile. Profound degenerative changes in the sex glands occur along with atrophy of the endometrium. The glands of internal secretion show marked hypertrophy and hyperplasia.

These results induced Rio to study the effect of subtraction of vitamin E from the diet of animals already pregnant. Sixteen female rats at the beginning of pregnancy were chosen for experment.

In three, abortion occurred after a fortnight; in ten, there was premature parturition; only three went to term.

On examination of the organs he found alterations similar to those in non-pregnant animals, but more extensive. There were hæmorrhagic infarcts in the placenta but the fœtal organs were unaffected.

He attributes the interruption of pregnancy to these degenerative changes. The question arises why did three animals escape this result? It may be due to better physical state of the animal or of its reproductive organs. It is possible that many cases of amenorrhœa and interruption of pregnancy difficult to explain on other grounds are due to vitamin E deficiency in the diet or to its greater utilisation by the fœtus.

The presence of fat and lipoids in the decidual cells during normal pregnancy.

In 1905 Sfameni advanced the hypothesis that the decidual cells had an endocrine function, and in 1913 Gentili supported this opinion.

Martines undertook an investigation of the decidual cells, chiefly to ascertain whether their content was the result of degeneration or of cellular elaboration. In two years he examined 28 uteri removed by hystero-adnexotomy for various causes and in different stages of pregnancy.

He concludes that; (1) fats, and especially lipoids, are a normal content of decidual cells during pregnancy being present in greater quantity during

its first half. (2) They are an expression of endocrine activity, not of degeneration. (3) In the later months of pregnancy, particularly towards term, this endocrine activity ceases and the decidual cells become subject to involution changes.

A case of bilateral purulent gonococcal otitis media.

Grossi describes a rather rare case of gonococcal infection through the blood-stream ending in severe otitis media. The patient, aged 24, entered hospital just before term. Pregnancy had run a normal course almost to the end when acute pelvic pain set in with abundant leucorrhœa. Gonococci were detected in the pus. Treatment with anti-gonococcal vaccine and local antisepsic applications were begun immediately and continued after delivery. A rise of temperature occurred on the fourth day, due to bronchitis and cystitis from which the patient had suffered on admission. A sudden alarming rise of temperature and pulse-rate on the sixth day was accompanied by great pain in both ears, complete deafness, and profuse offensive otorrhœa.

An ear-specialist found gonococcal middle ear inflammation. The doses of vaccine were increased in quantity and frequency and continued till the seventeenth day, when the temperature became normal. On the twenty-third day the patient had recovered hearing and otorrhœa had stopped.

Grossi considers that infection by contact could be excluded because of the rigid antisepsis employed.

Administration of thyroid extract in the treatment of eclampsia and severe albuminuria (A counter-test to Mück's sign).

Grossi gives a brief description of 22 cases of eclampsia and albuminuria successfully treated by administration of thyroid extract. In pregnancy the thyroid seems to exercise a double function—regulating glandular exchange and nullifying toxic influence. Of necessity, therefore, it hypertrophies and hyper-functions.

Grossi notes that 16 out of 22 cases of eclampsia were primigravidæ, and that hypo-thyroidism and primiparity exhibit a more direct connexion than one might suspect. Hypo-function is detected through the factor of pregnancy. It may become obvious in the first pregnancy and may be repeated in successive pregnancies. The efficacy of the administration of thyroid products is not restricted to the cases in which albuminuria finds its *raison d'être* in thyroid insufficiency, but is manifested wherever the vaso-motor system is weak or diuresis is below normal.

Under thyroid treatment along with appropriate diet, he obtained lowering of the blood pressure and diminution of the albuminuria, and these improvements persisted after the return to normal diet. In cases in which albuminuria was due to chronic renal disease, thyroid administration was of little use. Interruption of pregnancy was the only treatment.

J. H. Filshill.

Revista Italiana de Ginecologia

January 1929.

Arterial function in the puerperium. Paroli.

Dawes reaction in the biologic diagnosis of malignant tumours. Magnani.

Pregnancy in an atresic uterine horn. Cetroni.
Determination of germ virulence and its importance in prognosis of puerperal infections. Albanese.
Functionality of the thyroid in so-called essential metrorrhagia. Abruzzese.

February 1929.

The granulo-pessic activity of the reticulo-endothelial apparatus. Clauser.
Uterine hypoplasia and Veronese constitution. Pomini.
*Calcium and ovarian function. Davanzo.
*Indican in the blood during pregnancy. Magnani.
Hœmo-peritoneum—Uterine fundus in the seventh month of pregnancy Bolaffio.

March 1929.

The human placenta. D'Erchia.
The pathogenesis and therapy of the metrorrhagia of puberty. Maurizio.
Urinary elimination in pregnancy. Scaglione.
Clinical and experimental study of gravid œdema. Paroli.
The sulphur content of the placenta. Madruzza.

May 1929.

Early surgical intervention in hidden encephalo-cranial lesions of newly-born infants. (Conclusion). Camayo.

June 1929.

*Congenital pelvic ectopic kidney as cause of dystochia. Abruzzese.
Enzyme reaction in gynæcology. Biochemical aspects of the blood. Candela.
Castration and Basedow's disease. Superbi.
*Folliculin and glycæmia. Rossi.
Experiments in auto-vaccine therapy in gynæcological infections. Albanese.
Certain urinary reactions in obstetrics and gynæcology. Madruzza.

July 1929.

*Vaginal Cæsarean section in a case of pregnancy toxæmia. de Moraes.
Dystocia due to a tumour. Tavares.

August 1929.

Asthma and gestation. Vignes.
Premature placental detachment. de Moraes.
*Bullet wound in a gravid uterus. Motta, Maia, and Vianna

Calcium and ovarian function.

Many authors have worked out the relation existing between the exchange of calcium and the function of the spleen, thyroid and parathyroid. The action of the ovary on calcium metabolism is not so well known. Davanzo has therefore investigated the difference of calcium content in diverse conditions of ovarian function. His researches pass from normal ovarian function through hypo- hyper- and dys-function till the gland is completely absent.

The starting-point of this research was Fehling's observation that castration sometimes cured osteomalacia. Davanzo finds that alteration in ovarian function runs parallel to ionic equilibrium which may manifest

itself by either an increase or a diminution of calcium in the blood. The line of research which gave him the most uniform and satisfactory results was that of cases which had undergone castration. In nearly every one a diminution in calcium percentage was shown. Ovarian auto-unrest seemed to prove that the grafted ovary might for some time at least fulfil its function as well as a normally situated ovary.

Castration and the natural menopause are not identical in their effect on calcium exchange. In the natural menopause diminution in calcium is never so manifest. In senility the calcium value lies on the normal inferior limit. It would appear that ovarian deficiency no longer determines dis-equilibrium in the surrounding ions. The other endocrine glands have gradually supplied the place of the failing ovary and the organism has created a new regulatory system.

Indican in the blood during pregnancy.

Magnani gives the results of investigations on the quantity of indican in the blood during various periods of pregnancy in normal and pathological cases.

He concludes that indicanæmia acquires pathological significance, only when it exceeds certain limits.

He considers the index valuable even in normal cases as an indication of the renal condition. It may show diminishing renal function although other signs are not yet evident. When the index is raised it is always a reliable criterion of the intensity of a renal lesion.

Congenital pelvic ectopic kidney as cause of dystochia.

Abruzzese describes a case in which a congenital solitary pelvic kidney caused obstruction to labour and necessitated a Cæsarean operation.

The patient, aged 26, had had one previous confinement, apparently normal in every way. No renal deficiency had been suspected. In the second confinement she was brought to hospital at the beginning of labour because of podalic presentation and obstruction to delivery from a pelvic tumour. This was diagnosed to be a uterine fibroma which had developed in the right broad ligament. It was decided to operate immediately. After incision, the "fibroma" was found to be an ectopic kidney. Further abdominal exploration showed that there was no right kidney in its normal site and that the left kidney was wanting.

Sub-total hysterectomy was performed. Connected with the round ligament there was a rudimentary uterine body along with partial aplasia of the corresponding Fallopian tube. It was a case, therefore of co-existent deformities of both genital and urinary systems.

An ectopic kidney frequently leads to abnormal presentations, particularly podalic. Ascertainment whether there is another kidney is imperative in such a case since extirpation of a solitary kidney is among the list of fatalities due to deficient examination.

Folliculin and glycæmia.

The effects of castration and of ovarian grafts have sufficiently established the existence of ovarian endocrine function. It is not quite clear, however, to which ovarian element this activity is due. The follicular liquid seems implicated, and Rossi's investigation, therefore, has been

undertaken to study its influence on the exchange of carbo-hydrates or rather to find how injection of folliculin would affect glycæmic percentage.

He divided his experiments into three series according to the nature of the injection :— (1) sub-cutaneous or endo-venous injection of pure folliculin ; (2) ultra-filtrate or watery extract of folliculin ; (3) the same extract deprived of albumin but containing 40 per cent of hormones.

In the first series, hyperglycæmia was produced in all the animals—more intense after endo-venous injection. This hyper-glycæmia was not high but was constant. In the second and third series there was sometimes slight hyper-glycæmia and sometimes no result. Even with high doses of folliculin no toxic effects were produced.

He considers that hyper-glycæmia in the first experiment is probably due to the protein constituents of the fluid.

As regards the influence of folliculin on glycæmia it cannot be compared to that of insulin. Therefore there is no experimental basis for employing folliculin in the treatment of diabetes.

Vaginal Cæsarean section in a case of pregnancy toxæmia.

De Moraes describes a case of very serious pregnancy toxæmia for which he had to carry out a vaginal Cæsarean section. The patient, a iii-para aged 29, had suffered from Basedow's disease after her first confinement and subsequently from gonococcal infection. Treatment appropriate to both diseases seemed to have cured them. In her fourth pregnancy she consulted de Moraes at the fifth month because of low general health and bronchitis. Pregnancy appeared to be running a normal course, but a fortnight later he was called to see her because of symptoms suggesting encephalitis. In a day or two complete amaurosis occurred and an eye specialist feared retro-bulbar lesion of the optic nerve and consequent atrophy unless pregnancy were immediately interrupted.

De Moraes considered that in the fifth or sixth month a vaginal Cæsarean section, with Bumm's method of anterior hysterectomy, was the best operation. This was successfully performed.

The chief risks of the operation are injury to adjacent organs such as bladder or rectum, extension of the incisions so as to cause hæmorrhage, and post-operative sepsis. All these dangers can be avoided by scrupulous care in technique and rigid attention to asepsis.

Bullet wound in a gravid uterus.

The authors report a case of a penetrating bullet wound of the abdomen in a woman almost at term. The patient was brought to hospital eleven hours after the accident. The wound of the projectile's entrance was in the epigastric region. On performing laparotomy, two perforations were found in the lower ileum with fæces issuing from them. The mesentery was torn and there was incipient peritonitis. There was a small wound in the fundus uteri with slight hæmorrhage. The fœtal heart-sounds were fairly strong. In the interest of the child it was decided to perform Cæsarean operation at once rather than wait for spontaneous delivery and possibly a dead child. The classic incision was made, beginning with the wounded point. The child, a male, was asphyxiated at birth, but was revived. There were contused wounds in his left axilla and elbow, and

examination by X-rays showed that the bullet had lodged above the elbow. The operation lasted forty minutes. Both mother and child recovered.

J. H. Filshill.

Japanese Journal of Obstetrics and Gynecology.

June 1929.

*Pulmonary lipase in human fetus and human new-born child. Appendix: other visceral lipases. T. Tachibana.

*The effect of pregnancy, labour and puerperal confinement upon the function of the circulatory system. Part II. Blood pressure of the capillaries during pregnancy and puerperium. Y. Kanki.

*Phsyiological investigation of fetus. (Report IX.) Supplementary research of ferments in digestive organs: lactase in intestinal canal. T. Tachibana.

*Physiological investigation of fetus. (Report X.) Supplementary Researches on the ferments in the digestive organs: amylase in the intestinal canal and the liver. T. Tachibana.

*Bacteriological study of peritoneal cavity in case of uterus cancer before and after operation. T. Sato.

*Cancer of the uterus and pregnancy. K. Ihdima

*Effect of excessive corpora lutea on pregnancy and labour. F. Kubo.

Birth injuries in the new-born. Part II. Clinical observation of intracranial hæmorrhage in the new-born infants. H. Yagi.

Neck edema due to nephritis of pregnancy. Y. Kanki.

Functional stenosis of soft parturient canal indicating Cæsarean section. T. Sasaki.

Life duration in case of cancer of uterus when palliative treatment is given. T. Kumamoto.

Anuria due to irradiation. R. Mibayashi.

Change in the blood figure before and after operation in case of uterine cancer. Y. Suwa.

*Investigation of the ferments in the inner genitals of women. Part I. Lipase in the Fallopian tube. T. Tachibana.

*On the fluctuation of the normal immune bodies in the blood of gravid and puerperal women. (Report I.) On the normal agglutinin. T. Sato and Y. Katsu.

*On the fluctuation of the normal immune bodies in the blood of gravid and puerperal women. (Report II.) On the normal precipitin. Y. Katsu and T. Sato.

Histological investigation of the pancreas by means of ligature of the vena pancreatica and the ductus pancreaticus. T. Akehi.

*Pregnancy, puerperium and labour of elderly primiparæ. S. Kimura.

Experimental study of Krönig's operation. Part II. The effect of Krönig's operation on the transplanted uterus sarcoma in the rabbit. T. Kumamoto.

Pulmonary lipase in human fetus and human new-born child.

The results of Tachibana's experiments are thus summarized:—

1. Lipase is demonstrated in the lungs of the human new-born child.

2. Lipase is clearly demonstrable in the lungs of the human fœtus.

3. The denial of the presence of lipase in the lungs as advocated by Pagenstecher and Nakamura cannot be accepted.

4. Lipase in the lungs of the human fœtus is well demonstrated even in the fœtal fourth month, and after that month a gradual increase in the quantity of production is recognized as the number of fœtal months increases.

5. The lipase in the lungs of the human fœtus and human new-born child is smaller in quantity and later in the period of its demonstration than that in the intestines and the liver. As compared with the stomach and kidneys, however, the period when its production is first recognizable is almost the same, but the quantity of production is somewhat less.

6. In the skin, the gall-bladder and the brains of the human fœtus and the human new-born child, the action of tributyrin-decomposing lipase is so feeble that its importance is doubted.

The effect of pregnancy, labour and puerperal confinement upon the function of the circulatory system. Part II. Blood pressure of the capillaries during pregnancy and puerperium.

Kanki found that of 94 cases of healthy pregnant women examined, the average capillary blood pressure obtained was 130.4 mm., the lowest being 95 mm. and the highest 208 mm. (water). The blood pressure of the capillaries of the healthy women in puerperium, was higher on the first day after labour than that of any other period of pregnancy and it gradually receded until the normal value was reached. The capillary blood pressure of pregnant women with œdema was higher than the normal value. There was no relationship found existing between the capillary blood pressure and the ordinary blood pressure.

Psysiological investigation of fetus. (Report IX). Supplementary research of ferments in digestive organs: lactase in intestinal canal.

Tachibana's results were as follows:—

1. Lactase is demonstrated in the mucus membranes of the intestinal canal of human new-born children.

2. Lactase is demonstrated well even in the intestinal mucus of human fœtuses.

3. The production of lactase in the intestinal mucus of the human fœtus is well demonstrated in the fourth fœtal month.

4. The production of lactase in the intestinal canal of the human fœtus gradually increases in quantity as the fœtal months increase in number, and markedly increases in the 7th–8th fœtal months. The fœtus can commence an extra-uterine life only on reaching this stage of development.

5. The quantity of lactase produced in the intestinal canal of the human new-born child is markedly increased by suckling.

Physiological investigation of fetus. (Report X.) Supplementary researches on the ferments in the digestive organs: Amylase in the intestinal canal and the liver.

A summary of the results of Tachibana's experiments are thus given:—

1. Amylase is demonstrated in the intestinal canal of the human fœtus and the human new-born child.

2. The production of amylase in the intestinal canal of the human fœtus and the human new-born child takes place in the mucous membrane of the organ.

3. Amylase is evidently demonstrated in the liver of the human fœtus and the human new-born child.

4. The production of amylase in the liver and in the intestinal canal of the human fœtus and the human new-born child can well be attested in the third fœtal month.

The production of amylase is somewhat stronger in the liver than in the intestines, and the production of the ferment in both the organs increases in quantity as the number of the fœtal months increases.

Bacteriological study of peritoneal cavity in case of uterus cancer before and after operation.

Sato finds that the recent technical improvement in the radical abdominal panhysterectomy for cancer of the cervix uteri has decreased to small proportions the instances of transmission of the vaginal bacteria to the peritoneal cavity during the operative manipulation. Most of the organisms connected with the parametritis following the extirpation of the uterine cancer seem to invade the locality after the operation. Hence it is likely that the method of the treatment after the operation is of great importance for prognosis.

Cancer of the uterus and pregnancy.

Ihdima finds that the operability of uterine cancer complicated by pregnancy is 97.3 per cent, being far greater than that of general uterine cancer. The prognosis is bad, the relative curability being below fifty per cent.

Effect of excessive corpora lutea on pregnancy and labour.

Kubo shows that the corpus luteum is not indispensable to the continuance of pregnancy; that excess or insufficiency of corpora lutea has no effect on pregnancy; and that even when abundant artificial corpora lutea are added to natural corpora lutea, the continuance of pregnancy is normal.

Investigation of the ferments in the inner genitals of women. Part I. Lipase in the Fallopian tube.

Tachibana draws the following conclusions:—

1. The secretion of lipase in the human Fallopian tube is clearly proved.

2. The locality of the production of lipase in the human Fallopian tube is the mucous membranes.

3. The lipase in the Fallopian tube is inhibited by quinine, atoxyl, cocaine strychnine, and degree of inhibition is proportional to the concentration of the poison.

4. The lipase in the human Fallopian tube is inhibited far more by cocaine and strychnine than by any other poisons.

5. The morbid Fallopian tube produces lipase in smaller quantities than the normal.

6. It is difficult to recognize any particular relation between the lipase in the human Fallopian tube and the periodicity of menstruation, the number of labours and uterine diseases.

On the fluctuation of the normal immune bodies in the blood of gravid and puerperal women. (Report I.) On the normal agglutinin.

Sato and Katsu find that :—

1. In the third and the fourth months of pregnancy the values of the normal agglutinin for b. typhosus of healthy pregnant women have a greater variable range than that of the non-gravid, that is, one has a higher value, another a lower. In the fifth month of pregnancy its value reaches that of the non-gravid; in the sixth, seventh and eighth months it becomes gradually higher and as pregnancy advances, the values grow higher. But on the contrary, immediately after the labour these values begin to decrease and approach gradually to those of the non-gravid.

2. The values of the normal agglutinin of the blood sera of 18 women before the labour have, on the whole, no marked difference as compared with that of the same women after the labour. But it is recognized that there are several cases of instance that had a little higher values of agglutinin after the delivery than before.

On the fluctuation of the normal immune bodies in the blood of gravid and puerperal women. (Report II.) On the normal precipitin.

Katsu and Sato find that :—

1. The value of the normal precipitin of the gravid woman is approximately equal to that of the non-gravid; and in both cases there are few instances that showed positive reactions of precipitation.

2. On the whole, there is a little marked difference between the value of the normal precipitin in the puerperium and that in the last month of the pregnancy, or before the labour. According to the experiments that were made three times in the first week of childbed, namely on the first, the third and the sixth day, it was observed that not a little instances showed evidently positive reactions immediately after the labour, in spite of the negative reactions before it.

Pregnancy, puerperium and labour of elderly primiparæ.

Studying the statistics of women who had their first labour when above thirty years of age Kimura concludes that the new-born children of elderly primiparæ were extremely bad in the development immediately after birth, as compared with all other new-born children. As the primary cause must be mentioned the fact that the maternal body was advanced in age, and as the secondary causes the bad process of pregnancy, and the bad process of labour.

F. E. T.

The Cancer Review.

The following abstracts are abstracted from "The Cancer Review: a Journal of Abstracts," by kind permission of the British Empire Cancer Campaign.

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Evidence that cancer is not a simple Mendelian recessive. C. C. Little. *Jour. of Cancer Res.*, 1928, 12, pp. 30–46.

This is a measured criticism of Slye's theory that genetically cancer is a simple Mendelian recessive like albinism. It is based on the pedigrees

published in Slye's 26 reports. The author gives credit to Slye for a prolonged and laborious piece of work, but draws attention to details such as inaccurate diagnosis of the cause of death, repetition of genealogies in different charts, and insufficient data, in regard to the age at death and to the sex of certain of the mice, which he considers vitiate her conclusions. In general, however, it is "the simplicity and dogmatism of her genetic interpretation" which he chiefly attacks. In the mating of cancer with cancer, according to Slye's figures, he asserts that 106 matings gave 241 cancerous and 106 non-cancerous progeny, which is not in accordance with the hypothesis of a simple Mendelian recessive. If the progeny is analysed according to sex, a remarkable preponderance of females with cancer is noted, 3.59 to 1, as against a ratio of cancer to non-cancer in males of 1.34 to 1. If these matings are further analysed for mammary cancer, a hundred cancers are found in the females and none in the males, which, he considers, shows that in this cross-cancer of the mammary gland is sex-limited, that not all types of cancer can be considered the same, and that therefore cancer cannot be a simple Mendelian recessive. Further, of 231 mammary cancers from different matings 98.2 per cent were in females, and of cancers of other types only 51.2 per cent. In the mating of mice with cancer of the mammary gland with non-cancer lines, when compared with matings of mice with cancer of other organs with non-cancer mice, 23.8 per cent of cancer of the mammary gland is obtained with the former matings as against 9.4 per cent with the latter. This suggests to him that cancer of the mammary gland is a sex-limited Mendelian dominant, which would accord with the work of Lynch. Taking Slye's figures for this hypothesis, he finds that the cross-mating of lines with mammary cancer with non-cancer lines gives a progeny in which the result on Mendelian expectation is too low. He therefore suggests the possibility "that the forms homozygous for cancer of the mammary gland may possibly be lethal." Again, he says that Slye's data show that the progeny of parents with like types of cancer gave 27 non-cancerous to 15 cancerous. He considers that this shows that the two types of mating are genetically dissimilar, and that different types of cancer are dependent upon different genes. His conclusions are that hereditary predisposition plays an important part in the incidence of cancer, that the genetic behaviour of mammary cancer is distinguished from that of other types, that it is sex-limited and dominant, and that the non-mammary types of cancer give evidence of more than one genetic factor. He definitely affirms that all forms of cancer are not due to a single and simple Mendelian recessive factor. H. J. B. Fry.

The relation of heredity to cancer. M. Slye. *Jour. of Cancer Res.*, 1928, 12, pp. 83–133.

Miss Slye answers Little's criticisms (*see* preceding Abstract) of the basis of her scientific work by defending it in detail. She accounts for the comparative absence of breast cancer in male mice not by sex-limitation but by the lesser liability in males than in females to lesions of the breast, and asserts that her males with breast cancer transmit the disease. She considers that the only safe basis for classifying mice as cancerous is to count only those animals which actually show cancer at necropsy, and that nothing can be assumed as to the character of others, as Little does. She criticizes Little's analysis of her figures on the ground that he has not stated the

individuals which he has taken to make up his totals, and numerous genealogies are given to disprove Little's theory that mammary cancer is dominant and sex-limited. She states that a male mouse with cancer of one location, for example lung, can be a hybrid carrier of a cancer of another location, for example breast, and can transmit the latter to his posterity. She therefore disputes Little's theory that non-mammary cancer is due to different genetic factors from breast cancer. Charts are given to show that mammary cancer cannot be either a homozygous or a heterozygous dominant as believed by Little. She replies in detail to minor points of Little's criticism. Concerning the re-publication of charts, she states that the strains of individual mice have been numbered, and on occasions these have been stated to have been previously published, and she does not think that this has mislead other workers. Certain somatically non-cancerous mice of double cancerous parentage (strain 338) she admits have been omitted from charts because she was unable to classify them, since they were potentially cancerous, though actually non-cancerous at necropsy. She thinks that Little's method of reckoning these mice as cancerous parents but non-cancerous progeny is unjustified, and contends that his criticism of 106 non-cancerous progeny of cancer-by-cancer matings falls to the ground. Six months had been adopted by her as the lower limit for cancer age, though many of her mice have not developed cancer until one or two years old. Although she has not dealt in totals till a final analysis has been made of her material, she gives certain figures supporting her theory, which according to her show only 10 per cent of error, the latter being attributed to deaths under cancer age. She emphasizes that Little has not taken sufficiently into account the absence of cancer in hybrid mice of the first generation derived from a cross between a pure-bred non-cancerous mouse and a cancerous mouse, and gives numerous tables in support of her contention. (*See also* Abstracts 769, 770, pp. 375, 376). H. J. B. Fry.

Ovarian secretion and tumour incidence (in mice). W. S. Murray. *Jour of Cancer Res.*, 1928, 12, pp. 18–25.

Using an inbred stock of mice in which has been developed a line with an inherited tendency to spontaneous mammary adenocarcinoma in 80 per cent of the breeding females of cancer age, the author has found a positive correlation between the time of appearance of the growth and the normal sex life of the animals. Since the breeding males did not develop this tumour, the question arises whether the development of this growth is correlated with the ovarian secretion. The effect of non-breeding in the females of the strain caused a fall in the percentage incidence of tumours from 80 to 11.5 per cent, and an increase in the mean age of the appearance of cancer from 10.5 to 15.8 months. Ovariectomy caused a decline in tumour incidence to 17.1 per cent and an increase in the mean cancer age to 17.5 months. Castration in males of the same stock caused no tumours to form, so that the testicular tissue does not secrete hormones which act in an inhibitory manner upon the appearance of tumours. The results were striking when males of this stock were castrated and an ovary of a sister mouse was transplanted subcutaneously in the abdomen. Although normal males of this line never have mammary cancer, in 210 males so treated 15, or 7.1 per cent, developed cancer of the mammary gland, and the mean age of appearance of the cancer was 14.4 months, somewhat

similar to the mean age in virgin females. That the males with transplants who did not develop cancer were yet potentially cancerous is shown by the fact that their female ancestry was highly cancerous. The author, therefore, concludes that the ovarian secretions constitute an important factor in the production of cancer, but that in the normal breeding females other factors such as lactation and parturition play an additional part. (Cf. Cori, this *Review*, 1927, 2, Abstract 949, p. 467) H. J. B. Fry.

The effects of different amounts of sexual indulgence in the albino rat. VI. Life span and cause of death. J. R. Stonaker. *Amer. Jour. of Physiol.*, 1928, 85, pp. 106–117.

"Tumours were developed in 13 per cent of the animals. They were more prevalent in the females than in the males. Two were uterine, three ovarian, two stomach and the others were located just under the skin and were classed as skin tumours. In a few cases these skin tumours became raw and cancer-like in appearance. This may have been due to abrasions which later became infected. All the tumours began developing rather late in the life of the animal. In some cases this abnormal growth was relatively enormous and made it difficult for the animal to move about easily. In one animal (A3, stationary cage, virgin) whose weight at death was 309 grm., an internal tumour near the stomach measured 30 × 60 × 70 mm. and weighed 95 grm. In 23 per cent of the autopsies no organic trouble could be noted and death was attributed to old age. Tumours were found more prevalent in females than in males. The virgins had the lowest per cent of tumours and the medium and heavy breeding females had the greatest per cent. Ovarian tumours were found only in the heavy breeders (D) and in the excessive indulgence group (E). The results seem to indicate that the bearing of the greatest number of young possible was favourable to the development of tumours which usually appeared late in life or after the females had ceased to breed. Only one male developed a tumour. This was in group E. Apparently the different amounts of sexual indulgence permitted the different groups of males had little if any effect on tumour formation." (It is unfortunate that these tumours were not examined by a pathologist.)

E. L. Kennaway.

Retroperitoneal tumours. (882) Katz. Ueber retroperitoneale Lipome. *Bruns' Beitr. klin. Chir.*, 1928, 142, pp. 864–870. 883) G. Schwarz. Zur Kenntnis retroperitonealer Geschwülste und deren röntgenologische Symptome. *Wein. Klin Woch.*, 1928, 41, pp. 266–270. (884) Löffler. Lymphangioma cysticum retroperitoneale. *Ibid.*, p. 1066. (885) G. Bonfanti. Sui tumori retroperitoneali. *Osp. Magg.*, 1927, No. 12 (summary in *Zentralb. f. Chir.*, 1928, 55, p. 708).

(882) Katz describes two cases of retroperitoneal tumour occurring in women aged 49 and 39. In Case 1 the tumour, a fibrolipoma, was apparently removed radically, but 18 months later a second similar tumour occurred. In Case 2, at operation in 1913 a large lipoma weighing 85 kilos was removed; operation for apparent recurrence three years later revealed a liposarcoma, and the patient died soon afterwards. (883)Schwarz describes a large lipomyxosarcoma arising from behind the right kidney and causing great displacement and compression of the stomach and liver; the X-ray

appearance enabled accurate diagnosis to be made before operation. (884) Case of cystic lymphangioma which appeared to be retroperitoneal origin. (885) In Bonfanti's case a man of 46 showed a large abdominal swelling with definite fluctuation and convex upper percussion limit. At laparotomy a large retroperitoneal tumour was found, but removal was considered inadvisable on account of the patient's poor condition. Biopsy proved it to be a lipoma. Soon afterwards there was general improvement in health, which was maintained up to time of reporting—two years after operation.

F. Cavers.

Treatment of cancer of the cervix by radiation. A. Gunsett. *Strasbourg Méd.*, 1928, 88, pp. 193–201.

The author describes in detail the different methods of radiation of cervical carcinoma and discusses the comparative values of operation and radiation. He emphasizes the fact that adenocarcinomas are radio-insensitive and should always be surgically treated. Secondary infection, cure of which is often impossible, is a frequent cause of radiation failures. Another cause of failure is previous insufficient radiation which renders the malignant cells radio-resistant even to subsequent high doses. The author recommends a combination of radium and X-rays administered in one series for three weeks. The radium may be given in either single large doses for a short period or small doses for a long period. Every effort should be made to obtain homogeneous radiation of the neoplasm. For each application 70 to 80 m.c. are used, but 40 to 50 m.c. are sufficient. Radium treatment should always precede operation and never follow it. The author combines his local treatment with X-ray treatment, and employs the Seitz-Wintz large field method, i.e., three anterior, two posterior and two lateral fields. As an alternative to this, radium therapy at a distance may be used, but this requires at least one gram of radium. The occurrence of a leucopenia is an indication for discontinuance of the treatment.

The following indications for radiation and operative treatment are suggested by the author. (1) Good operable cases: radium treatment followed by surgical removal and X-ray treatment, or surgical treatment followed by X-ray treatment. (2) Border-line cases: radium and X-ray treatment without surgical removal, or surgical removal and post-operative X-ray treatment. (3) Inoperable cases: (*a*) with patent cervix—radium and X-ray treatment: (*b*) with occlusion of the cervix—X-ray treatment alone. (4) Hopeless cases: X-rays alone.

P. J. Kerley.

Pregnancy complicated by carcinoma of the uterine cervix. W. Neill. *Radiology*, 1928, 11, pp. 429–430.

According to Stern, therapeutic abortion by X-radiation is possible any time before the fifth month of pregnancy, and even later if the treatment is properly administered. The time of expulsion varies mostly from 14 to 42 days—one of 70 and another of 128 days have been recorded. The age ranges from 19 to 40 years. Bowman cites a case treated with X-rays at the third month of pregnancy which went on to delivery of a normal child at the eighth month, and Martin reports a case very similar to the author's where a pregnancy with carcinoma of the cervix was allowed to proceed to delivery in the eighth month after treatment with radium and X-rays during the second month. The child was normal.

The author's case is that of a woman aged 28, with carcinoma of the cervix complicated by pregnancy. She had been married 10 years and had had four normal pregnancies. In June, 1926, she became pregnant, and in September she had some scanty vaginal bleeding which was growing more profuse. Bromides and rest had been prescribed for the threatened abortion without affecting the bleeding. On examination, a squamous-celled carcinoma of the cervix was found. The cervix was completely removed. In December four glass radon seeds, each of 2½ m.c., were implanted permanently into the cervical stump. Three days later 1,765 m.c. hours of radium radiation were given direct (technique not stated). Pregnancy continued normally with cessation of bleeding until January, 1927, when labour pains began, and a healthy child was delivered by Cæsarean section. On April 1, 1927, a superficial metastatic nodule one cm. in diameter was removed from the right vaginal orifice with the cautery. In April, 1928, the mother is well and there is no trace of recurrence. Menstruation has not returned. The child is healthy and developing normally in every way. P. J. Kerley.

Vol. iv, Nos. 8–9, 1929.

Apparent recurrence of ovarian cancer, with death twenty years after operation. Arnold. *Med. Klin.*, 1928, 24, p. 814.

A remarkable case of apparent recurrence of carcinoma 16 years after operation is described by the author. The patient, a woman of 62, recently died with general carcinomatosis of the peritoneum, liver and various bones of the skeleton. In 1908 she had both ovaries removed on account of ovarian carcinoma, no sign of metastasis being observed at operation. She remained in apparently good health until 1924, when a large abdominal tumour was found on laparotomy to be a carcinomatous deposit in the great omentum. This tumour, which presented the microscopic features of an ovarian cancer, could not be completely removed. However, for the next four years the patient remained in good health and became very obese. Then she had repeated severe uterine haemorrhage and died suddenly.

At necropsy, the tumours in the peritoneum, liver and bones were found, like that seen in the omentum four years before, to have the structure of ovarian cancer. The uterine mucosa showed hyperplasia, which was not of the type sometimes found associated with ovarian tumours but was, despite the patient's age, that of a strongly developed decidua. Apparently the tissue of the metastases from the ovarian carcinoma had assumed the hormonal peculiarities of the parent ovarian tissue and had set up decidual development in the uterus. F. Cavers.

"Spontaneous cure" of carcinoma of ovary. A. Labhardt *Schweiz. med. Woch.*, 1928, 58, pp. 995–996.

The author points out that while transplanted malignant tumours in animals have been shown to undergo spontaneous cure in a fair percentage of cases, such cure is apparently of rare occurrence in human cancers. Partial cures, due to resorption of the malignant tissue and its substitution by normal tissue, are of fairly frequent occurrence, while in rare cases there has been reported complete disappearance of a malignant tumour after an incomplete operation, or that of metastatic deposits after extirpation of

the primary growth. Since some at any rate of these cases seem of doubtful authenticity, it is important to record any which can be vouched for both clinically and histologically.

A woman (age not stated here) was first seen by the author in 1917 on account of recent rapid abdominal enlargement, and palpation showed, in addition to ascites, two tumours each of about adult fist size, hence bilateral ovarian carcinoma with omental metastasis was diagnosed. At operation the ovarian tumours were removed, but there were numerous metastases on the parietal and visceral peritoneum which had to be left alone, as was also the case with a fist-sized deposit in the omentum which consisted of friable and highly vascular tissue. Histological diagnosis: papillary cylinder-celled carcinoma.

During the next eight months the patient was given six series of X-ray treatments, front and back, but at an early stage (less than three months after operation) clinical examination showed that no tumours or fluid could now be palpated, and the patient has remained in good health during the past ten years. As the author points out, the prognosis of ovarian carcinoma is by no means good, the figures for operative cure vary from 9 to 30 per cent, but most statistics give from 10 to 12 per cent. In discussing the case the author remarks that the X-ray dosage was apparently too small for this treatment to be credited with the cure, even if it be admitted that metastases are less highly malignant in nature than the primary tumour. In this connection mention is made of Lubarsch's theory that toxic substances formed by the primary tumour may, so to speak, fertilize the soil for the growth of metastases, and of Borst's theory that in cancer, as in infective diseases, there is a battle between the organism as a whole and the diseased cells and that therefore local operative measures may be greatly assisted by general therapy in such forms as diathermy, small X-ray doses, sunlight treatment, exercise, massage, etc. F. Cavers.

Two cases of carcinoma of the uterus in mice. L. Heidenhain. *Zeits. f. Krebsforsch.*, 1928, 28, pp. 174–185.

Cancer of the uterus is extremely rare in tame mice. Slye and her collaborators stated in 1924 that in 39,000 mice they had observed at least 5,000 primary spontaneous tumours, but not a single carcinoma of the uterus. According to Heidenhain only two carcinomas of the uterus have been recorded in the literature. In his own observations on 2,050 mice which had been inoculated with human cancerous material (*see* this Review, 1928, 3, Abstract 820; 1929, 4, Abstracts 11, 12) 170 mice developed tumours. Of these, two were carcinomas of the uterus. One case shows a very distinct transformation of the columnar epithelium into squamous epithelium. In the second case the columnar epithelium is transformed into a round-cell form. The author seems to suggest, although it is not very clearly stated, that these alterations are evidence of a gradual transformation of normal cells into malignant cells by an "agens."

The evidence for the author's views is presented in an ideal manner. There are only three pages of text and nine full-page plates of exceptionally good microphotographs.

(There were no metastases, the tumour was not transplanted and the figures are at any rate not convincing evidence that the condition was malignant.) W. Cramer.

Fowl tumours produced by mixtures of Rous sarcoma and embryonic pulp. H. T. Deelman. *Ann. de Méd.*, 1928, 24, pp. 360–370; 7 figs.

The author has been unable to reproduce the experiment of Carrel (*see* this Review, 1926, 1, p. 291) in which a malignant tumour was produced in embryo pulp under the action of arsenic. The relations between Rous sarcoma and embryo pulp was investigated. The age of the embryo was found to be of importance. The maximum rapidity of growth was found when the sarcoma was mixed with embryo of the age of 14 days. The tumour then attained the size of an egg in six days, while in the control birds, which received Rous tumour only, the tumours on that day were "scarcely perceptible." This result was obtained repeatedly. But if samples from these two tumours be inoculated into fresh birds, the two grow at the same rate. The author considers that this experiment shows that the embryonic pulp acts by increasing the quantity of virus. If cell-free filtrates of the two tumours are used, the result is the same. Cell-free filtrate of embryo has the same accelerating action as embryo pulp. Three series of fowls were inoculated (*a*) with Rous sarcoma, (*b*) with Rous sarcoma and embryonic pulp, (*c*) with the same mixture after incubation at 37° for an hour; *a* and *b* showed the contrast in rate of growth described above, *c* showed little or no growth—in this case the virus appears to be adsorbed upon fragments of pulp which are left at the bottom of the vessel.

Tumours produced with mixtures of Rous sarcoma and embryonic pulp, which have stood for some time before inoculation, show a histological character which is quite different from that of the ordinary Rous sarcoma. Microphotographs are given, which in the author's opinion show that these tumours have rather the structure of a medullary cancer. The spindle-shaped cells have disappeared, and tubules and small cysts are seen. If cell-free filtrates of these tumours be inoculated the classical structure of the Rous sarcoma reappears in the resulting tumour. If, on the other hand, cellular material be taken from the tumour for a transplant, the first generation shows the atypical structure described above, but after three or four transplantations the typical structure of the Rous tumour is regained. The author's interpretation, based upon the histological appearances, of these experiments appears to be that if Rous virus is inoculated alone, malignancy is conferred upon the fibroblasts of the host, but if embryonic tissue is present malignancy appears in this tissue only. (The reason for the return from the atypical tumours to the original type after several transplantations is not suggested. A very full discussion of the possible interpretations of such experiments has been given recently by Boycott). E. L. Kennaway.

Cholesterol content of serum after radiation. R. Hubert. *Klin. Woch.*, 1928, 7, pp. 208–211.

Estimations of blood cholesterol by Bloor's method were made in a series of patients on a standard diet before and immediately after X-ray treatment, and on each of the first four subsequent days. (1) In nine cases of inoperable carcinoma of the cervix the amount fell by from 17 to 47 per cent of the original amount (e.g., from 171 mgrm. before, to 107 mgrm. per cent 24 hours after, radiation). (2) In a series of cases two to five months after radical operation for carcinoma of the cervix radiation was followed by a rise in the amount; in the single example described the

percentage increased from 110 mgrm. to 169 mgrm. (For some reason the total number of cases in this series, and the full table of results, are not given.) In a case in which the percentage fell a recurrence was found. (3) Sterilization of one or both ovaries by X-rays is followed by an increase of from 10 to 28 per cent of the original amount. (4) Intravenous injections of trypaflavin are followed by fluctuation of from 14 to 30 per cent in either direction. (5) Radiation of the long bones or liver in a series of cases in late pregnancy was followed by greater fluctuations (from +21 per cent to − 57 per cent). Control cases showed no variations greater than ±6 per cent. The author considers that the method can be used in the diagnosis of cancer and especially in the detection of recurrences.

E. L. Kennaway.

New reactions for carcinoma and their clinical utility. K. Atzerodt.. *Klin. Woch.*, 1928, 7, pp. 1076–1078.

The author gives a short list of recent tests for cancer, and describes in detail the albumin reaction of Surányi, which is carried out as follows. From 0.5 to 1 c.c. of serum is diluted in a centrifuge tube with normal saline in the proportion of 1 to 12. To precipitate the globulin, ammonium sulphate is added to 44 per cent. The tube is allowed to stand 30 minutes, 0.5 grm. of washed kaolin is added, and the mixture is shaken and centrifuged till crystal clear. To 1 c.c. of albumin solution thus obtained, one drop of acid (either 0.5 per cent HCl, 1 per cent acetic, or 0.25 per cent sulphosalicylic acid) is added carefully by means of a capillary pipette. The albumin solution obtained from carcinomatous subjects remains crystal clear, while that from healthy persons or from patients with other diseases shows marked turbidity or precipitation. By this method the author has done about 150 reactions, not only from carcinomatous cases but also from patients with tuberculous and gynæcological conditions and cases of pregnancy. Unlike Surányi, who investigated 82 cases and obtained 22 positive results out of 26 cases of carcinoma, the author found in 14 cases of carcinoma at different stages eight positive and six negative results. These negative results became positive if less than 30 per cent of ammonium sulphate was added, while on the other hand all the tests were negative if more than 48 per cent of ammonium sulphate was used, so that the precipitate or opacity varied in accordance with the amount of ammonium sulphate added. Of 18 normal pregnancies four were negative. The author considers therefore that this reaction has no clinical utility. He also examined the colour reaction of Gross, which consists in the addition of various dyes, such as methylene blue, eosin, or carmine solution, to the serum which is tested, and carried out in over 50 cases these colour reactions parallel with the red cell sedimentation reaction and the albumin reaction. Colour changes were, however, so transitory that the author, even on using them in combination with these other tests, was unable to obtain any definite result.

H. J. B. Fry.

A sacral neuro-epithelial tumour of fœtal origin. W. Susman. *Jour. of Pathol. and Bacteriol.*, 1928, 31, pp. 917–918.

A short description of an encapsulated post-sacral tumour removed from a woman aged 22 years. On account of its position and histology the author

considers it most likely that this tumour had its origin "in embryonic neural tissue left behind on the dorsum of the sacrum as a fœtal implantation, at about the time when the neural tube was being formed and as a result of a budding process." C. E. Dukes.

Testicular adenoma of ovary. O. Heesch. *Virchow's Arch. f. pathol. Anat. u. Physiol.*, 1928, 268, pp. 280–290.

In its fully developed morphology the testicular adenoma of the ovary (described by L. Pick) is a definite entity and exactly resembles the tubular adenomas of the undescended testis. There are other varieties of tubular adenoma of the ovary, however, which resemble the testicular ovarian adenoma in one or more of their morphological details, and these present great difficulties in classification. C. E. Dukes.

Etiology of carcinoma of the uterus. G. G. Ter-Gabrielian. *Zeits. f. Krebsforsch.*, 1928, 27, 362–377.

The author has investigated the previous obstetric history of 194 women suffering from uterine cancer. Of these 194 patients only 13 were nulliparous, the other 181 women had together 560 births. In the history of these 181 women only 133 births were uncomplicated (23.7 per cent), while 427 births (76.3 per cent) were accompanied by complications. This percentage is compared with the obstetric history of 6,826 women not suffering from uterine cancer, who had a total of 32,576 births, of which only 17 per cent were accompanied by complications. No detailed account is given as to how the presence or absence of birth complications is distributed in the cancer group. It is merely stated briefly that only a small number of women had an obstetric history with no complications at all, the rest had one or two normal births with at least one birth accompanied by complications, while in some cases the number of births with complications amounted to three or four.

It is concluded therefore that trauma inflicted on the uterus by complications at birth, including induced and incomplete abortions, constitutes an important etiological factor in uterine cancer. Another general factor is individual disposition. W. Cramer.

Statistics of 869 cases of uterine cancer. S. Mintz. *The Problems of Oncology.* Kharkoff, 1928, Vol. I, Book 4, pp. 304–315.

The author's analysis is based upon 99 cases of uterine cancer coming to necropsy in the years 1913 to 1924, none of which had been operated on; 42 cases treated by X-rays during 1921 to 1926; 36 operated upon during 1921 to 1926; 692 out-patients seen in the years 1926 to 1928. His conclusions are as follows. (1) Cancer of the uterine cervix occurs most frequently between the ages of 40 and 60. (2) Multiparous women are most frequently affected. (3) Cervical erosions are frequently the forerunners of cancer; hence in young women with longstanding erosions high amputation is advisable, and in older women hysterectomy. (4) Clinical and even histological diagnosis of early cervical carcinoma is frequently difficult. (5) Squamous-celled cancer is by far the commonest type in growths of the cervix. B. A. Perott.

Metastases and causes of death in 99 untreated cases of uterine carcinoma. P. Korokin. *The Problems of Oncology*, Khaikoff, 1928, Vol. I, Book 4, pp. 285–291.

Clinical and post-mortem notes on 99 cases of uterine cancer which were not operated upon. The chief immediate causes of death were nephritis, peritonitis, septicæmia, anæmia and cachexia. In 40 cases no metastases were found at necropsy. The sites of metastasis in the remaining 59 cases were as follows: retroperitoneal tissue, 43 cases; liver, 21; larynx, 6; spleen, peritoneum, mesentery, 4 each; omentum, 3; liver, pleura, diaphragm, cellular tissue of the neck, 2 each; groin, kidney, skin, heart muscle, intestine, 1 each.

B. A. Perott.

REPORTS OF SOCIETIES.

ROYAL SOCIETY OF MEDICINE.

Section of Obstetrics and Gynæcology.

A Meeting of the Section was held on Friday, June 21st, 1929.

The President, Dr. J. S. Fairbairn, in the Chair.

Dr. Lawton Moss showed a

Gigantic Fœtus.

A patient aged twenty-two, who had had one previous normal confinement, two years previously, a female child, weight 10 lb., was admitted to the Louise Margaret Hospital, March, 1922, with albuminuria and œdema, which cleared up on treatment. Abdominal enlargement was greater than normal, and multiple pregnancy or hydramnios was suspected. She went into labour naturally and after one and a-half hours in the second stage forceps were applied as there was no advance, and with difficulty the head was delivered. Still greater difficulty was experienced with the shoulders, which finally had to be extracted with the aid of a blunt hook. The puerperium was normal. The fœtus, which was stillborn, weighed 24 pounds 2 ounces, and was 35 inches long.

Mr. A. J. Wrigley reported two cases of adenomatous tumour of the vulva, which he said resembled that reported by Schickele. These cases were discussed by the Chairman, Dr. Spencer, and Mr. White.

Dr. Gibberd read a short communication on the uses of animal bladders for the induction of premature labour, which was discussed by the Chairman and Dr. Spencer.

Mr. Bright Banister read further notes on difficult labour in an Australian aboriginal, with post-mortem measurements of the pelvis, by Professor Cleland and Drs. Dawson, Wallace, and Hackett.

A previous confinement in this patient had been reported in 1928; she reported again for a further confinement and induction was attempted by various methods, including a De Ribes' bag, but it was some days before labour actually commenced.

An attempt was made to deliver the child as a breech, but the body became so tightly impacted that this was impossible, and the patient died, and a post-mortem Cæsarean section was performed. A full description of the pelvis with all measurements and photographs was shown.

Dr. C. D. Read and Mr. Frederick Roques read a paper on

The After Results of the Operative Treatment of Endometriomata—a Study of Forty-one Cases.

These cases were divided according to their site into: ovarian, uterine, abdominal scar, recto-vaginal space, and umbilical, and only cases where microscopical examination of the growth proved the diagnosis were reported. Many tables were shown, giving the exact location of the tumour, the operative measures adopted and the results obtained; and the follow-

ing conclusions were arrived at: (1) The results of operative treatment of 41 cases are shown to be satisfactory. (2) There is a field for radium; (3) The operative procedure undertaken is either "conservative" or "radical," depending on complete removal or otherwise, of ovarian tissue. (4) The following factors influence the method of treatment in any given case:

(*a*) *Age.*—The younger the patient the stronger is the indication for conservative treatment except in large tumours with extensive infiltration of surrounding structures.

(*b*) *The Extent of the Lesion.*—This influences the decision between conservative treatment on the one hand, and radical and "radium" treatment on the other. Conservative treatment is indicated for a limited growth in young patients, radical operation for all extensive lesions in patients over 38 years of age, especially in the presence of mechanical symptoms. Radium is a useful adjunct in inoperable cases, and in cases in which radical operation has failed.

(*c*) *Site.*—(i) Ovarian endometriomata lend themselves to both forms of surgical treatment depending on the factors already considered. (ii) Uterine endometriomata should similarly be treated, remembering the governing principles of age, extent, and parity. Local lesion is less frequently possible than in the case of the ovarian tumours. (iii) Endometriomata in the recto-vaginal space, if accompanied by uterine or ovarian involvement, demand radical operative treatment. Localised tumours lend themselves to both local excision and radium therapy. (iv) Scar and umbilical endometriomata are satisfactorily treated by local excision. In these situations radium is a possible alternative. Its use has not yet been exploited.

EDINBURGH OBSTETRICAL SOCIETY.

A meeting of the Edinburgh Obstetrical Society was held on the 12th June, 1929, with the President, Dr. HAIG FERGUSON, in the Chair.

Dr. CHASSAR MOIR read a paper on

"THE MECHANICS OF INTERNAL ROTATION OF THE FŒTUS."

The subject of the rotation of the fœtus had in the past brought forward so many varying and conflicting theories regarding its exact mechanism that it was thought desirable to open up the subject afresh.

A theory to be valid must explain the movements of rotation which take place in normal and abnormal presentations. The rotation of the shoulders in a cephalic presentation, the rotation of the pelvis in a breech presentation, the rotation of the after-coming head, the rotation which occurred in the experiments of Dubois and of Edgar,—all these facts had to be accounted for. The theory must also explain why on rare occasions the normal mechanism breaks down.

The necessity for rotation was then illustrated by means of models which allowed a fœtus to escape when the occiput was anterior, but which became impacted on attempting to repeat the movement with the occiput in the posterior position.

The structure of the birth canal was then considered, and reasons were given for ignoring the slight differences in measurements of different cross-sections. The canal was a hollow passage of even contour and calibre, and was sharply bent at its lower end.

The shape of the fœtal head and trunk was discussed in detail, and a demonstration was given by photographs, of direct tracings of the head, and also of tracings and photographs of frozen sections made by the speaker. From these investigations it was possible to draw the following conclusions: (1) Moulding profoundly alters the shape of the fœtal head. (2) The flexed and moulded fœtal head must be regarded as a bluntly pointed cylindrical structure very nearly symmetrical about its long axis. The apparent asymmetry of the face and mandible was due to the fact that the cylinder was obliquely cut off at its base. (3) In the flexed and moulded fœtal head the occiput and the sinciput ceased to be recognisable as projections. (4) At the level of the "girdle of contact" the fœtal head was circular on cross section and the presenting part beyond this was a symmetrically shaped dome. The apex of this dome which impinged on the pelvic floor was a point which coincided with the central axis of the head. (5) From frozen sections it was shown that the point about which bending occurs in the neck is very nearly equidistant from the front and back of the neck.

A criticism of the theories of the mechanics of rotation was then made. It was obvious that the fœtus must be studied in the shape and form which it assumes when rotation occurs. The head was an appendage of the trunk, and the two must be considered as a whole. Yet, almost all theories were based on the study of a dried and unmoulded head which had been severed from the trunk. Sellheim's theory was discussed, and it was shown that some of the many criticisms with which it had been faced were invalid. There was contained in this theory an unassailable truth. The theories of Paramore and of Young were criticised. Young's model was described. The speaker believed that the rotation which it demonstrated played some part in parturition, but was not the essential cause of rotation of the fœtus. Berry Hart's theory failed because the part which first touched the pelvic floor was the dome-shaped presenting part. This point was in the direct line of the long axis of the head. Lateral pressure on it could only cause tilting of the head. It could not cause rotation because rotation required an eccentric pressure.

Four facts were necessary to explain rotation: (1) The fœtus was driven through a canal by a force acting from above. (2) This canal was sharply curved at its lower end. (3) The flexed and moulded fœtal head was a cylinder which was attached to the trunk, which formed a second cylinder. (4) These cylinders could be bent on each other with unequal ease in different directions. By picturing the forces which arise when such a body is forced through such a canal, it could be seen that rotation must inevitably occur until the part of the body which was least easily bent, coincided with the concavity of the lumen of the canal. The head, because of its flexed attitude, and because of the structure of the neck, could only with difficulty be further flexed. On the other hand, it could be readily extended. Lateral flexion required an intermediate degree of force. Figures obtained by actual measurement confirmed the statements.

Descriptions and demonstrations were then given of a model designed to illustrate these mechanical facts. By altering the strength of various elastic bands the effects of the different forces could be studied. This model showed both short and long internal rotation of the occiput.

Certain additional factors contributed to the rotation. The head when at rest was angled on the trunk. This aided rotation. A second model was demonstrated in which this angle was reproduced. This model also showed the apparent asymmetry due to the face and mandible of the child. The artificial vertebral column was more elaborate than in the first model. The point at which the vertebral column joined the head was accurately determined by the information gained from the frozen section of a fœtus. This model demonstrated both short and long internal rotation with even greater ease than the first model.

A mathematical explanation of the forces causing the rotation was then given.

This theory was shown to apply equally readily to the rotation which occurred in a face presentation. Here again, the head was a cylinder,and this time it could be bent most easily in the direction of flexion and least easily in the direction of extension. Forward rotation of the chin therefore took place. The theory also explained the rotation of the after-coming head. Rotation of the shoulders in a cephalic presentation, and of the pelvis in a breech presentation could also be accounted for by the unequal flexibility of the trunk in two directions. Short rotation could therefore occur. Long rotation required three unequal flexibilities. The occasional persistent occipito posterior, and persistent mento posterior cases were accounted for by the lack of complete flexion in the one case, and of complete extension in the other. The head could then be almost as easily flexed as extended. The essential factor was therefore missing and rotation consequently failed.

The cause of rotation could be broadly stated thus. Part of the driving force exerted on the fœtus in causing it to pass through a curved canal was absorbed by that body, and converted into certain unequal lateral forces. These pressures reacting from the walls of the canal brought into play tangential forces which in turn caused rotation of the fœtus.

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